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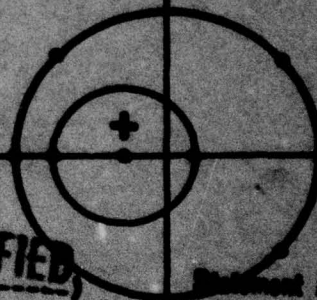
OPERATION RANGER

Nevada Test Site, Jan. - Feb. 1951

Volume 6

ADMINISTRATIVE SUMMARY REPORT

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ADMINISTRATIVE SUMMARY REPORT

By Carroll L. Tyler
Manager, Santa Fe Operations

LOS ALAMOS SCIENTIFIC LABORATORY
of the
UNIVERSITY OF CALIFORNIA
Los Alamos, New Mexico
July 1952

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ADMINISTRATIVE SUMMARY REPORT

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ADMINISTRATIVE SUMMARY REPORT

By Carroll L. Tyler

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volumes, they are cited here for general information and interest.

"Continuous Radioactivity Monitoring of the Atmosphere at the Atomic Energy Project, University of California at Los Angeles; Part I: The Period after the Nevada Tests." L. Baumash, W. R. Kennedy, G. Streit. UCLA-148. July 20, 1951. (Official Use Only)

"Fall-out in Southeastern United States during January and February 1951 from the Nevada Atomic Tests." F. J. Davis. ORNL-1081. Nov. 27, 1951. (Official Use Only)

"Survey of Fall-out of Radioactive Material following the Las Vegas, Nevada, Test Explosions." NYO-LA-1. Feb. 27, 1951. (Official Use Only)

"Evaluation of the Effects of Atomic Bomb Detonations in the State of Nevada on Air-borne Contamination at Knolls Atomic Power Laboratory, Knolls Site and Environs." L. J. Cherubin. KAPL-550. May 7, 1951. (Secret)

"Observations on Fall-out from the Nevada Tests; January 27 to February 6, 1951." M. M. Weiss and J. B. H. Kuper. Brookhaven National Laboratory. TID-5027. (Official Use Only)

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Part I

GENERAL ORGANIZATION AND OPERATION

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1. GENERAL ADMINISTRATION

1.1 INTRODUCTION

Part I of this volume is designed to serve as a general summary of the administrative and support activities of Operation Ranger, as performed under the direction of the Manager, SFO, in accordance with delegated authority from the General Manager in January and February 1951. The technical report of this Operation is included in separate volumes prepared in the Los Alamos Scientific Laboratory.

Part II contains more specific coverage of various phases of this Operation and serves to amplify the general information given in Part I. Each of the sections of Part II was prepared by the AEC official charged with the operational phase covered.

It is intended that this volume serve not only as a record of the administrative and support activities but as a guide for the future AEC execution of test programs performed within the continental limits of the United States. In some instances specific recommendations have been incorporated for future consideration, and certain of these recommendations have already been utilized in the planning for Operations Buster and Jangle at the Nevada Test Site.

1.2 BACKGROUND AND OBJECTIVES

Early in December 1950, senior staff members of LASL first approached the Manager, SFO, concerning the programmatic necessity for an early series of test detonations to be performed well in advance of the already planned series for Eniwetok in the spring of 1951.

Prior to that time the AEC and LASL staffs had collaborated in surveying a number of potential sites for possible use as continental proving grounds in the event that Presidential approval could be obtained for the first continental tests since the Trinity test at Alamogordo, N. Mex., July 16, 1945. This survey had resulted in the recommendation that an area of 360 square miles (a rectangle, 12 by 30 miles) within the limits of the Air Force Bombing and Gunnery Range in the mountainous desert country 70 miles north of Las Vegas, Nev., be acquired for test purposes. Initial discussion had been held with the Air Force in regard to this acquisition, but no firm agreement had been reached. Consequently, when the December discussions were opened, this Nevada site was proposed as the location for the required series of tests.

The proposal for this test program was endorsed by the Manager and was submitted to the Division of Military Application (DMA) in Washington for consideration by the Commission. Prompt Commission approval was obtained, and rapid steps followed in presenting the proposal to Departments of State and Defense and ultimately to the President and the National Security Council. All the required approval actions, up to the highest level, were forthcoming by the end of the year.

Although such authorizations were secured, difficulty was experienced in reaching general agreement concerning the nature and content of a public announcement covering the establishment of the proving ground and its use for test detonations. A release with all the necessary concurrences was finally issued for publication on Jan. 11, 1951. This release stated that the President had authorized the use of a part of the Bombing and Gunnery Range so that LASL might have a readily accessible site for periodic experimental nuclear detonation under controlled conditions, in order to speed progress of the weapons development program. It was announced in this release that the Department of Defense, the Air Force, the Air Weather

Service (AWS), and the U. S. Weather Bureau would provide assistance in the test program. The Air Force training program near the new site would not be affected by the tests. Further, it was made clear that radiological safety and security precautions to be applied at the AEC section of the bombing reservation would provide adequate assurance of safety. The full security restrictions of the Atomic Energy Act would apply to the new site. In addition, this release made public the plans for the Santa Fe Operations Office to open a Field Office at Nellis Air Force Base, Las Vegas, Nev., in connection with the work at the site.

Another release, also issued for publication on Jan. 11, 1951, pointed out that immediate expenditure would be less than \$1,000,000 but that eventually between \$5,000,000 and \$10,000,000 would be spent to stabilize the site.

It was only after this information was made public that the AEC could openly operate and negotiate in the Las Vegas area.

While these policy decisions were being made in Washington, planning was pushed at Los Alamos for the design and construction of necessary structures at the test site and for the organization of supporting facilities and services. With receipt of the favorable Washington decision, the Manager issued a letter of intent to the Robert E. McKee Company for a cost-plus-fixed-fee contract to build required structures and facilities during the next 30 days. The McKee organization was rapidly mobilized; key personnel from various McKee projects were immediately shipped to the site, and construction began. To supervise the contractor and to provide on-the-spot contact with agencies in the Las Vegas area, a Project Officer was appointed by the Manager. At this time the test site was officially designated as Project Mercury (later called Nevada Test Site and ultimately Nevada Proving Grounds).

During this build-up the Laboratory staff formulated a specific program for the tests for review and approval by the Commission. This proposal identified the objective of an early test in order to the results of recent laboratory developments in advance of the already scheduled Eniwetok tests in April and May 1951.

1.3 ORGANIZATION AND STAFFING

1.3.1 Duties of Manager

By a Directive of the General Manager, M. W. Boyer, dated Jan. 15, 1951, Carroll L. Tyler, Manager, SFO, was appointed the responsible officer of the AEC for the conduct of Operation Ranger. The authorizations and instructions contained in this Directive were as follows:

1. To utilize minimum essential personnel and resources committed to Operation Greenhouse, and to coordinate that use with the Commander, JTF-3.
2. To utilize all pertinent resources of the SFOO, in order that the Operation might be successfully conducted and that the administrative burden of LASL might be minimized.
3. To deal directly with the appropriate agencies of the Department of Defense on the details of military support for this Operation, and to coordinate requirements in this respect through the DMA.
4. To make a separate recommendation to the AEC, through the DMA, regarding the firing of item F as described in the test program submitted by the Laboratory Director through the Manager, SFO, on Dec. 22, 1950; and to submit this recommendation during the course of the Operation at an appropriate time.
5. To expend the fissionable materials described in the last sentence of the memorandum dated Jan. 4, 1951, from the AEC to the Special Committee for Atomic Energy Matters, National Security Council; this memorandum was approved by the President on Jan. 11, 1951, and a copy was forwarded to the Manager, SFO.

1.3.2 Organizational Recommendations to Manager

In view of the very limited time available for the planning of this Operation, the formation of its organization was accomplished under heavy pressure. During early January 1951, a

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number of conferences were held with LASL, SFO, Washington, and military officials participating to determine the most effective organization for executing the test program. These discussions were concluded in a two-day session, Jan. 12 and 13, 1951, when a committee of advisers headed by Col. Paul T. Preuss, USAF, prepared a report* with specific recommendations as follows:

In response to your verbal request, I have spent two days, January 12 and 13, looking into the present status of plans for Operation Ranger. I was assisted by Colonel W. E. Pheris, USA, J-4, JTF3, Lt. Colonels L. E. Ireland, USAF, and P. L. Hooper, USA, both of J-3 Division, JTF3. Before discussing details and making specific recommendations, I should like to comment that the general plans and preparations appear to be sound.

A. ORGANIZATION

The Organization Chart of Operation Ranger prepared by your office, dated January 11, 1951, has been discussed in detail. It appears that fundamental deficiencies in this organization are the lack of a full-time staff headed by a full-time Executive Officer. I recommended that a staff be formed which would include a Technical Director and staff officers responsible for administration and logistics, plans and operations, security, communications, and public relations. It is recommended that the organization provide functioning groups with the following responsibilities:

1. Test Group

(a) experimental programs; (b) radiological-safety; (c) meteorology; (d) the establishment of requirements for special flights involving the bomb dropping, USAF experimentation, cloud tracking, and special courier flights; and (e) weapon preparation and assembly

2. Administrative Services Group

(a) housing; (b) messing; (c) medical facilities; (d) motor transportation; (e) administrative travel arrangements; (f) construction; (g) maintenance; (h) administrative supply; and (i) office services

3. Security Group

(a) protection of restricted data; (b) surveillance of the local area; (c) traffic control; (d) access control; (e) coordination with local law enforcement authorities; (f) establishing requirements for aerial patrol; and (g) experimentation sites

4. Communications Unit

(a) establishing requirements for fixed facilities; (b) supervision of operating personnel; (c) arrangements with commercial and military telephone and radio services; and (d) the provision of encoding and decoding facilities.

B. PERSONNEL

1. In order to implement the organizations discussed above, it is recommended that immediate steps be taken to assign a full-time Executive Officer from the staff of SFOO. I understand that Mr. Macy is under consideration. I consider Mr. Macy to be well qualified.

2. I recommend that action be taken immediately to secure the services of one Air Force Colonel, with plans and operations experience, Q cleared, and with some background in the Atomic Energy Program. I recommend that you request General McCormack to secure the services of a qualified officer immediately.

3. I understand that Mr. McElwreath will serve as your Security Staff Officer; Mr. Kennedy as your Communications Staff Officer; and that Mr. Johnson, in addition to directing the Administrative Services Unit, can serve as your Administrative-Logistics Staff Officer.

*Memorandum dated Jan. 14, 1951, from Col. Paul T. Preuss, USAF, J-3, JTF-3, to Carroll L. Tyler.

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I assume, further, that Dr. Graves will act as Test Director.

C. COMMUNICATIONS

1. The communications plan appears to be adequate with the exception of the capacity of the two pairs of telephone cables from Indian Springs to Las Vegas. As a result of our discussions, it is understood that three additional pairs from Indian Springs to Las Vegas thru the control point can be provided by 26 January. It is recommended that installation of these additional three lines be followed up as a high priority requirement.

2. It is also noted that the Air Force has not provided ground to air communication facilities at Indian Springs. It is recommended that a requirement be established with the 1800th AACS Wing at Tinker Air Force Base to provide VHF equipment and operating and maintenance personnel. In order to assist in developing this requirement, Colonel Ireland has contacted the 1800th AACS Wing. A representative will contact Mr. Hubbard early this week to discuss details.

D. AIR TRANSPORTATION

1. From discussions it developed that the Security Group, the Test Group at Zero Site, and the Rad-Safety Patrol Unit will require some helicopter lift. It is recommended that the Special Weapons Command be requested to furnish, or request of other Air Force agencies, additional aircraft to provide a total of four helicopters desired, with three as a minimum. It is recommended that these helicopters be the H-5 type, preferably four-place, and that they be based, together with first and second echelon maintenance and operating personnel at Nellis Air Force Base and stage forward as required to Indian Springs. One detail which your Communications Staff Officer should check into is the special radio equipment to permit these helicopters to work with the Security or Rad-Safety Groups.

2. It is understood that one Carco Bonanza is presently planned for local operations at Las Vegas and one between Las Vegas and the Albuquerque area. In view of the distances involved, the fact that senior personnel may be living at the city of Las Vegas, and the requirement of the Rad-Safety Unit to travel quickly to areas of heavy fall-out, it is recommended that at least two Bonanzas be available in the Las Vegas area.

E. EMERGENCY EVACUATION

1. It is recommended that the Test Group be relieved of any responsibility for the preparation or execution of an emergency evacuation plan. Their responsibilities should be limited to providing the technical information upon which you can make a decision to implement emergency evacuation.

2. In the development of an emergency evacuation plan it is recommended that you consider the assistance of an Army unit such as a Cavalry Reconnaissance Troop reinforced with a truck platoon. Details of strength, equipment, and location should be discussed with representatives of the 4th Army upon their arrival this week.

3. It is recommended that a survey be made of hotel, hospital, and armory housing capacity in the area. It is also recommended that you determine the extent of assistance which the Red Cross and other aid organizations may be able to make available. It is recognized that public relations considerations may not warrant full discussion of this matter with responsible officials.

4. The emergency evacuation plan should include actions which you would take in the event evacuation approaches disaster proportions.

F. HEADQUARTERS

The present plan calls for various portions of activities to be controlled from four locations. It is recognized that time does not permit the completion of administrative arrangements for centralization of these activities; however, I would recommend that the location of your headquarters be established and announced to all concerned.

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G. MISCELLANEOUS

It is recommended that instructions be issued to insure that all personnel operating in the field provide themselves with adequate clothing. It is further recommended that transportation requirements be reviewed in light of the extended operating area. It would also appear that one official be designated as the contact man with Nellis Air Force Base when requesting assistance.

H. STATUS OF PLANS

In order that all personnel engaged in this operation understand their respective roles, and to facilitate staff supervision, I recommend that an overall plan be prepared as soon as possible. Annexes to this plan would include the experimental program, rad-safety plan, the logistic and administrative plan, the operations of aircraft required for technical scientific purposes, the operation of other aircraft, the delineation of responsibilities, and organization charts.

I. REQUIREMENT FOR THE ESTABLISHMENT OF A PROHIBITED AREA

It is understood that DMA has started action to have a Prohibited Area established. The boundaries of this area should be based on security and safety considerations. In view of the agencies involved and actions required, once approved, it is recommended that this action be expedited. The Plans and Operations officer should be responsible for local contact with CAA in the event of rad-safe hazards along airways.

J. CONFIRMATION OF REQUIREMENTS

In order that there may be no confusion in the assistance to be given by other agencies, it is recommended that verbal arrangements made to date be confirmed by appropriate correspondence as listed.

1. Special Weapons Command

To include (a) drop airplane; (b) courier aircraft; (c) helicopters; and (d) liaison officer.

2. 4th Army

Upon completion of talks with the representative of the 4th Army, a letter confirming your requirements for assistance from the 4th Army.

3. Air Weather Service

C. O. 2059th Air Weather Wing, Tinker Air Force Base, to include the mobile observation stations, the augmentation of the Nellis Weather Station, and the assignment of a special forecaster.

4. Airways and Air Communications Service

C. O. AACS Wing, Tinker AFB, Oklahoma, to include the provision of equipment and personnel to operate the control tower at Indian Springs and any other requirements which develop after communication between Mr. Hubbard and 1800th AACS Wing.

5. Headquarters USAF

Including the confirmation of their experimentation and cloud tracking services.

6. Nellis Air Force Base

The provision of various services, housing, operational arrangements for both AEC personnel and the military units participating in RANGER as they may involve Nellis and Indian Springs.

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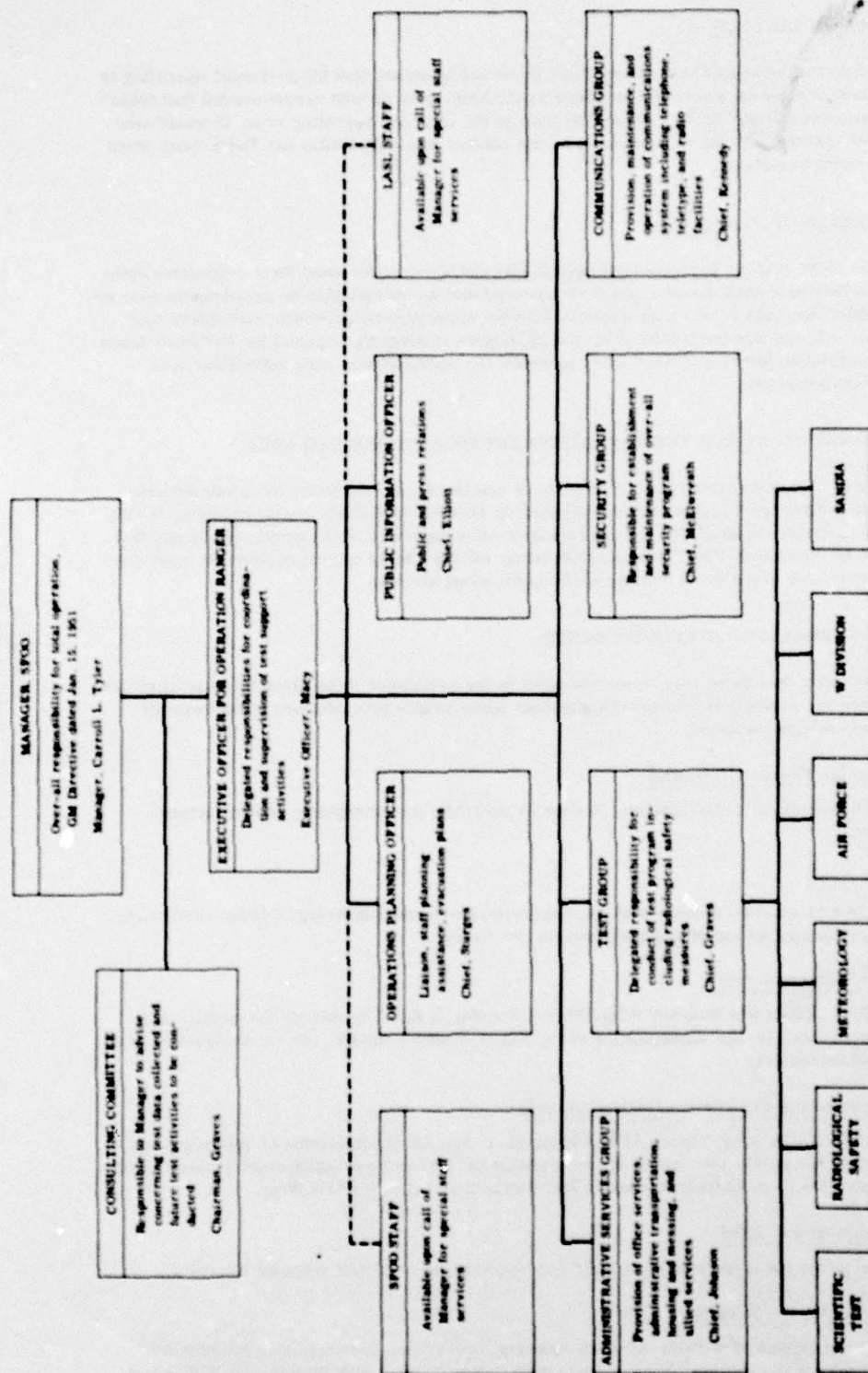


Fig. 1—Organization chart for Operation Ranger as approved by Carroll L. Tyler, Manager, SFOO, on Jan. 16, 1951.

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7. C. G. 6th Army

Confirming the need or lack of need of assistance from the 6th Army and a brief of your emergency evacuation plan.

8. C. G. Western Air Defense Command and C. O. 11th Naval District

A brief mention of your operation for orientation purposes in the event action by these Commands may be required.

9. Sandia Base

Notification that no assistance will be required from AFSWP Sandia. For coordination purposes, it may be well to inform C. G. Sandia Base of Sandia Corporation and Special Weapons Command participation.

The Manager very largely accepted the Preuss recommendations with a few modifications and on Jan. 16, 1951, activated the Operation Ranger organization with the issuance of a series of delegations of responsibility and authority to officials under his direction (see Organization Chart, Fig. 1).

1.3.3 Executive Officer

John W. Macy, Jr., SFO Director of Personnel and Organization, was appointed Executive Officer for Operation Ranger, in addition to his currently assigned functions as SFO Director of Personnel and Organization, by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities delegated to the Executive Officer were as follows:

1. To establish an organization encompassing staff organizations as may be required from existing personnel of SFOO and LASL.
2. To organize and direct an Administrative Services Group, a Security Group, and a Communications Group to operate at Project Mercury and allied sites.
3. To establish and coordinate operating organizations to support the Test Group.
4. To consider the Organization Chart (Fig. 1) as the approved pattern for organizing these functional units.
5. To authorize support and assistance as necessary, excepting contracting authority in excess of \$100,000 and the responsibility and authority for the over-all operation.
6. To delegate responsibilities and authorities to subordinate staff and operating personnel consistent with their individual requirements.
7. To prepare interim reports keeping the Manager fully advised concerning progress and phases of the activities.
8. To provide the Manager with an analysis of the individual activity reports prepared by the members of the Executive Officer's staff.

1.3.4 Operations Planning Officer

Lt. Col. William R. Sturges, Jr., DMA, Washington, D.C., was appointed Operations Planning Officer by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities of the Operations Planning Officer encompassed liaison with the Armed Forces in support of the test program of LASL. Further, the Operations Planning Officer was appointed staff assistant to the Executive Officer in the planning and coordinating of subordinate groups at Project Mercury and associated sites. Other responsibilities delegated to the Operations Planning Officer were as follows:

1. To plan for emergency evacuation of contaminated areas, and to submit to the Manager a complete operational plan for evacuation encompassing such items as: collection of evacuees; housing and messing of evacuees; protection of evacuated homes, farms, businesses, etc.; and medical facilities.
2. To advise the Manager through the Executive Officer of the progress and problems encountered.

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3. To participate in a final critique after the completion of the Operation, and to submit a final report to the Manager. (The final report of the Operations Planning Officer constitutes Sec. 2, this volume.)

1.3.5 Public Information Officer

Richard G. Elliott, SFO Information Director, was appointed Public Information Officer, in addition to his currently assigned functions as SFO Information Director, by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities delegated to the Public Information Officer were as follows:

1. To receive directions from and to report directly to the Executive Officer.
2. To conduct a continuous effective public and press relations program which will support the test program and at the same time best serve the interests of the public and the AEC through full observance of Commission policies and security regulations insofar as they pertain to the dissemination of news releases on the tests of the weapon.
3. To advise the Manager of progress and current problems.
4. To furnish the Manager a final activity report upon completion of the Operation. (The final report by the Public Information Officer constitutes Sec. 4, this volume.)

1.3.6 Chief, Administrative Services Group

Ralph P. Johnson, SFO Engineering and Construction Division, was appointed Chief of the Administrative Services Group, in addition to his duties as Project Manager for Project Mercury, by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities delegated to the Chief of the Administrative Services Group were as follows:

1. To report to the Manager through the Executive Officer.
2. To maintain office services and facilities in Las Vegas and Indian Springs, Nev.
3. To provide messing facilities and medical facilities.
4. To operate and maintain motor transportation; and to arrange for administrative travel (airplane, rail, and vehicle).
5. To provide for maintenance of buildings, roads, and operational facilities. (This includes the administration of contractor personnel in such maintenance.)
6. To administrate supply activities.
7. To perform such other duties or assignments as may be made by the Manager or the Executive Officer until completion of the Operation.

1.3.7 Chief, Test Group

Alvin C. Graves, J-Division Director, LASL, was appointed Chief of the Test Group by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities delegated to the Chief of the Test Group were as follows:

1. To direct all technical operations incident to the successful test objective established by separate directives for this Operation.
2. To prepare the nuclear devices to be expended in the Operation and to deliver them to the Special Weapons Command (SWC) at Kirtland AFB, Albuquerque, N. Mex.; to specify the height of burst; to provide directives for the fusing and nuclear safety provisions and to arrange all operational details with the SWC; to direct the SWC to make the drop when authorized by the Manager; and to cancel a drop for technical or safety reasons at any time without authorization.
3. To prepare and conduct an experimental program designed to determine the performance of the nuclear devices expended and such other experiments considered desirable and feasible.
4. To arrange with USAF for the operational details of cloud tracking and sampling necessary for AEC and LASL purposes.
5. To coordinate activities designed to give adequate assurance of radiological safety and to determine fall-out patterns.

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6. To collect meteorological information necessary for item 5 as well as for operational considerations.
7. To advise the Manager on meteorological and radiological safety conditions as required.
8. To determine the names of staff members who desire to witness a test; and to advise the Executive Officer, giving the names of such persons requiring administrative services.
9. To advise the LASL Director on technical results of preceding tests in order that he may advise the Manager of the next device to be expended from technical considerations alone.
10. To organize a committee, with the advice and concurrence of the Manager, to advise on the desirability of proposed drops from a radiological safety consideration.
11. To prepare a classification guide for the Operation.
12. To arrange for the shipment of records and samples to LASL from the site.
13. To advise the Manager through the Executive Officer as to test progress and current problems.
14. To submit a complete report in collaboration with supporting activities at the site upon completion of the Operation.

1.3.8 Chief, Security Group

William J. McElwreath, SFO Security Director, was appointed Chief of the Security Group, in addition to his duties as SFO Security Director, by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities delegated to the Chief of the Security Group were as follows:

1. To report directly to the Executive Officer.
2. To install and apply physical security means.
3. To install and apply personnel-security control measures, including visitor control.
4. To provide information security, including clearance of press and radio releases with the Public Information Officer (during actual operations this became a function of the Classification Officer, Ralph Carlisle Smith).
5. To provide shipment security of classified materials and data.
6. To utilize measures to safeguard storage of classified matter.
7. To delegate authority consistent with requirements.
8. To inform the Manager through the Executive Officer of progress or current problems.
9. To participate in the preparation of a final report on security activities to be submitted to the Manager. (The final report by the Chief of the Security Group constitutes Sec. 5, this volume.)

1.3.9 Chief, Communications Group

Richard L. Kennedy, SFO Chief of Communications, was appointed Chief of the Communications Group, in addition to his assigned functions as SFO Chief of Communications, by Carroll L. Tyler in a memorandum dated Jan. 17, 1951. The responsibilities delegated to the Chief of the Communications Group were as follows:

1. To report directly to the Executive Officer.
2. To establish, maintain, and operate a communications system at such places as may be required in support of the test program.
3. To operate and maintain adequate telephone, teletype, Sigtot, and radio facilities.
4. To supervise military radio operators loaned for the Operation.
5. To maintain facilities for the transmission and delivery of messages to proper personnel at sites.
6. To delegate authority consistent with requirements.
7. To participate in the preparation of a final report on communications activities to be submitted to the Manager through the Executive Officer. (The final report by the Chief of the Communications Group constitutes Sec. 3, this volume.)

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1.3.10 Deputy Chief, Test Group

Within the Test Group, Alvin C. Graves issued delegation of authority for key assignments in his organization. John C. Clark, J-Division, LASL, was appointed Deputy Chief of the Test Group by Alvin C. Graves in a memorandum dated Jan. 19, 1951. The responsibilities delegated to the Deputy Chief of the Test Group were as follows:

1. To represent the Chief of the Test Group at the control point during his absence; and to cancel a drop for technical or safety reasons at any time without further authorization.
2. To prepare and conduct an experimental program designed to determine the performance of the nuclear devices expended and such other experiments as are agreed by the Chief and the Deputy Chief to be desirable and feasible.
3. To arrange for the shipment of experimental records and samples to LASL from the site.
4. To arrange with USAF the operational details of cloud tracking and sampling necessary for AEC and LASL.
5. To arrange with the AWS the operational details necessary to obtain meteorological information to enable the Chief to advise the Manager on meteorological and radiological safety conditions as required.
6. To arrange with Sandia Corporation for the preparation of weapons (less capsules) to be expended; and to arrange with W-Division representatives at Sandia for the delivery of the weapons to the SWC, Kirtland AFB, Albuquerque, N. Mex.
7. To specify the height of burst and to provide to the SWC all necessary information of fusing and nuclear-safety provisions; and to arrange all operational details with the SWC.
8. To designate Gaelen Felt as a representative of the Test Group in details involving the SWC, the Sandia Corporation, and HQ, USAF.

1.3.11 Kirtland Air Force Base Representative, Test Group

Gaelen Felt, J-Division, LASL, was appointed Representative of the Deputy Chief, Test Group, at Kirtland AFB by John C. Clark in a memorandum dated Jan. 19, 1951. The responsibilities delegated to the Kirtland AFB Representative of the Test Group were as follows:

1. To arrange with Sandia Corporation for the preparation of weapons (less capsules) to be expended; and to arrange with W-Division representatives of Sandia for the delivery of the weapons to the SWC, Kirtland AFB.
2. To arrange with Sandia Corporation and with W-Division for instruction of the crew of the SWC in handling of special flight equipment and in procedures for nuclear safety activities; and to arrange all operational details with the SWC.
3. To assist at Kirtland AFB in the transshipment of experimental data to LASL.
4. To inform the SWC, Sandia Corporation, and W-Division of the exact nature of their duties, upon receipt of specific instructions from the Manager regarding operational details.
5. To represent the Deputy Chief of the Test Group regarding all matters pertaining to Operation Ranger.

1.3.12 Technical Deputy, Test Group

Frederick Reines, J-Division, LASL, was appointed Technical Deputy of the Test Group by Alvin C. Graves in a memorandum dated Jan. 19, 1951. The responsibilities delegated to the Technical Deputy of the Test Group were as follows:

1. To represent the Chief of the Test Group at LASL during his absence.
2. To accept all experimental records and samples sent to LASL from the site, to arrange for the analyses of these records and samples, and to inform the Fission Weapon Committee of the results of the analyses of these records and samples as to weapon performance and probably accuracy; and to give this information to the Chairman of the Fission Weapon Committee and to the Chief of the Test Group as soon as practicable after the receipt of experimental records and samples.
3. To advise the Kirtland AFB Representative of the Test Group and the Chief, Test

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Group, as soon as practicable, in case the Chairman of the Fission Weapon Committee or the LASL Director advises of a change in the prearranged schedule of shots.

4. To keep advised of operational details so that advice can be given the LASL Director and the Fission Weapon Committee as appropriate.

5. To act in the capacity of Leader of Group J-7 to advise the Deputy Chief of the Test Group as requested.

1.3.13 Chief, Radiological Safety Section, Test Group

Thomas L. Shipman, H-Division Director, LASL, was appointed Chief, Radiological Safety Section, Test Group, by Alvin C. Graves in a memorandum dated Jan. 24, 1951. The responsibilities delegated to the Chief of the Radiological Safety Section were as follows:

1. To direct all radiological safety operations incident to the successful test objective.
2. To staff the Radiological Safety Section with required personnel from LASL and where necessary from other appropriate units of SFO or from units of the Department of Defense.
3. To coordinate activities designed to give adequate insurance of radiological safety.
4. To advise the Chief of the Test Group on radiological safety as required.
5. To orient adequately the civilian personnel in the test area.
6. To advise the Chief of the Test Group of an operational plan for executing the radiological safety program.
7. To submit to the Chief of the Test Group a complete listing of all personnel, including name and organization affiliation, required to execute the operational plan for radiological safety.
8. To advise the Chief of the Test Group of all administrative services required by the Radiological Safety Section which the personnel of the Section will not be able to execute themselves.
9. To keep the Chief of the Test Group fully advised of the radiological safety program and current problems.
10. To submit, upon completion of the Operation, a full report in collaboration with such supporting activities at the site as are mentioned in the operational plan, item 6.

These delegations were based on the General Manager's Directive, dated Jan. 15, 1951, which vested over-all responsibility for Operation Ranger in the Manager, SFO. The organization pattern adopted was designed to provide a maximum of flexibility but at the same time to clearly identify basic responsibilities and authorities within the organization.

The staffing of this organization was immediate. Key personnel as indicated above were selected from LASL and from the AEC at Los Alamos and Washington. It was concluded that only through the use of such available personnel could the program be accomplished within the time limits established. Staffing throughout the Operation was maintained at a minimum, and consequently it was necessary for all personnel engaged in the Operation to work long periods of overtime. Heavy demands were made on the military services in order to obtain the essential supporting services for the Operation. The following services were prominent as members of the Ranger organization:

1. Air Force SWC, Kirtland Field: carrier aircraft and crews and transport and courier aircraft.
2. Air Force Weather Service, Oklahoma City: weather forecasting and meteorological services.
3. Air Force Office for Atomic Energy, Washington: aircraft sampling of radioactive clouds.
4. Company C, 82nd Reconnaissance Battalion, 2nd Armored Division, Ft. Hood, Tex.: available with vehicles for emergency operations and serving as transportation support.
5. Personnel of Nellis and Indian Springs Air Force Bases: base services of housing and messing facilities, operational buildings, communications systems, vehicles, flight clothing, and use of the gunnery range.
6. Personnel from Engineer Corps: participation on radiological safety teams and special research projects.

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Although the test series was a part of the LASL program, extensive assistance was provided from the Sandia laboratory in conducting instrumentation and other technical operations.

The exact number of personnel engaged in the Operation is difficult to report, since the number fluctuated to a substantial extent during the 30 days of major build-up and operation. It can be stated, however, that security passes were issued to approximately 550 individuals engaged in the Operation, including construction personnel at the site and military personnel assigned to the Operation.

1.4 PHYSICAL ARRANGEMENTS

Improvisation was the key characteristic in the physical facilities prepared for use during this Operation. Four separate and distinct locations were utilized in carrying out the tests: (1) locations within the city of Las Vegas, (2) Nellis AFB, (3) Indian Springs AFB, and (4) the control point in the test area.

Early in January the McKee Company acquired a vacant garage building at 817 South Main Street in Las Vegas, to serve as their city headquarters. This building was subsequently shared by the AEC Project Officer and by other AEC security and service activities. These facilities, however, were inadequate to serve as an operating and contact center for the Public Information Office, and, when the tests started, a room was rented in the El Cortez Hotel on Fremont Street for this purpose.

Without the active assistance and cooperation of the Commanding Officer at Nellis AFB the test program would have been impossible to accomplish within the stated time limitations. The regular program of this Base was subordinated to the requirements of the AEC operations.

A large training building was provided for the test staff as a headquarters building; it housed the briefing rooms, the telephone and telegraph center, the operations room for the aircraft trackers, and the headquarters for the radiological safety teams. In addition to this building the Base Commander made available space for the weather detachment in the operations building, an open encampment area for the bivouac of the Army personnel assigned for emergency duty, additional motor vehicles to supplement the AEC vehicle supply, housing quarters for a number of operating personnel, and the services of a number of key staff officers.

At the outset of the construction period the Indian Springs AFB, a satellite station to Nellis, was utilized for housing and feeding of construction personnel and as a warehousing and maintenance center. These facilities were later also used by operational personnel at the control point. The final shot damaged a number of buildings, particularly window panes, and it was necessary for the McKee organization to make extensive repairs.

A surplus frame building from Los Alamos was reerected at the control point to serve as a technical command post overlooking the target area. Access to this structure was limited to operational and maintenance personnel and was controlled through a guard post a quarter-mile away on the approach road.

1.5 FINAL PREPARATIONS

In preparation for the test program various elements of the Ranger organization moved into the Las Vegas area during the period from Jan. 15 through Jan. 24, 1951, when the dry run for the test operation was staged. The personnel arriving from Washington, Los Alamos, Albuquerque, and numerous other points were largely accommodated at regular resort hotels in the city of Las Vegas. During this period increased pressure was exerted on construction activities, and the technical crews began the installation of the instrumentation equipment. The building at Nellis AFB was equipped with the telephone and teletype facilities for the Operation, and the Air Force installed radio equipment and charting facilities for their tracking operations. The radiological safety teams conducted extensive surveys of the area downwind from the target and established teams in the communities involved to prepare for

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monitoring and to orient the residents concerning their work. The necessary guards reported to the Security Headquarters on Main Street and began to man the established guard posts in advance of the dry run. Security officials also made arrangements with local law-enforcement officers, primarily the sheriffs of Carson and Nye Counties, to assist in throwing a roadblock on the main highway near Indian Springs for the mornings of test operations.

As negotiations with the Air Force continued on the acquisition of the test-site area the dimensions of this area were enlarged to 640 square miles (16 by 40 miles). The formal process of acquisition was far from completed by the time of the tests, and the AEC used the area on the basis of a written use agreement.

Preliminary meetings were held with press and civic representatives in Las Vegas to announce the use of the proving ground and to give information concerning the press announcement released in Washington on January 11. By Jan. 15 the Classification Officer, Ralph Carlisle Smith, had completed a classification guide for the Operation and distributed it to all operating personnel. Two conferences were arranged during this period with CAA flight-control officials to determine procedures for alerting aircraft in the area during test procedures. Planning was also undertaken to prepare for the arrival and handling of visitors who would be in the area to observe the tests. It was necessary to establish separate procedures for those officials arriving from Washington and for employees of the Los Alamos and Sandia laboratories who arrived in the area at their own expense as unofficial observers. With the steady arrival of additional personnel, the vehicle availability was strained to the extreme, and it was necessary for the rental agent, from whom the cars were obtained, to ship in an additional supply from California.

1.6 OPERATIONAL PROCEDURE

Although each of the five detonations was preceded and followed by slightly varying conditions, the general procedures used for all operations were generally similar. For the purpose of this report, therefore, a representative 24-hr period out of the test experience will be described to illustrate the method of operation.

On the day preceding a planned shot a formal briefing meeting was called at 1300 to review the weather forecast for shot time and to determine whether all conditions were satisfactory to permit definite preparations for the test. Attendance at this meeting included members of the Consulting Committee, key personnel from the Test Director's staff, and representatives of the various supporting organizations. The Consulting Committee, although its membership varied slightly during the series, included the following experts in the meteorological and radiological safety fields: Brig. Gen. James P. Cooney, AEC; Col. George F. Taylor, USAF; Col. Benjamin G. Holzman, USAF; Capt. Howard L. Andrews, USPHS; Dr. Shields Warren, AEC; Darol K. Froman, LASL; and Dr. Thomas L. Shipman, LASL.

The weather-briefing officer submitted his forecast in detail, even to the extent of specific information concerning wind velocities and directions at various elevations. This forecast was, in turn, discussed by the members of the Consulting Committee who reviewed the possible effect of the forecast weather conditions upon the spread of radioactive material, upon the effectiveness of the test instrumentation, and upon blast effects.

During this discussion Dr. Shipman reported the latest information from monitoring teams concerning the presence of radiation following the most recent shot. Likewise, Colonel Cody described the data reported by the tracking planes as to the direction and extent of the radioactive cloud. After evaluation of all information a preliminary decision was made as to the desirability for proceeding with the shot schedule. Following this decision, general information was presented to the entire group concerning such matters as press and public reaction to the previous shot, plans for accommodating visitors and observers, reports of any damage, information obtained as a result of the roadblock, and plans for additional security measures.

Following this general meeting all groups were alerted as to the preliminary decision, and the organization was placed in a readiness condition by the time for the second briefing

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session at 2000. The general procedure of the previous meeting was repeated with more specific weather forecasting and more detailed discussion as to the effect of the forecast conditions upon the test operation. Reports were given as to the state of readiness at the control point, at Kirtland Field, at Nellis, and at the locations of the radiological safety teams. If all reports were favorable, it was announced that the test shot would take place at a designated time just prior to sunrise on the following morning, subject to a further weather review at 0300. Following this meeting a further check of all elements of the test organization was made; Washington and Los Alamos were advised of the decision; and final instructions were issued to all personnel involved.

The hours between the 2000 and 0300 briefings were, if possible, devoted to a small degree of rest for test personnel. However, it usually happened that last-minute arrangements for the review of further detailed preparation were necessary. This was particularly true for the tests attended by official visitors from Washington. Usually the plane carrying these official visitors landed at Kirtland Field during the early evening hours, and the visitors received a full briefing from the Commanding General, Air Force SWC, and the Director, LASL. After this briefing they reboarded the plane and arrived at Nellis at approximately 0200. The Commanding Officer at Nellis made available a cafeteria room in the operations building for security briefing, the issuance of special heavy clothing, and refreshment. Visitors were then placed aboard an AEC bus and traveled to the downtown office where they joined a convoy of other buses carrying test personnel and unofficial visitors. The convoy proceeded to a designated observation point about a quarter-mile from the control point where all observing personnel remained until following the detonation.

The scene in the operations room at the Nellis Administrative Building was one of gradually accelerating activity during this early morning period. The carrier aircraft and its accompanying B-50 and C-47 were reported when they departed from Kirtland Field, and, as they progressed westward, position reports were transmitted to the operations room and posted on the wall map. In addition, the monitoring planes based at Nellis began to take off during this period, and their positions were reported and plotted as they began to cover the area near the target.

In the case of all five tests the briefing at 0300 indicated no unfavorable trends in the weather forecast, and it was quickly concluded that the test could proceed as planned. On Feb. 5, the date originally selected for the final shot, it was necessary to postpone the test drop since the carrier aircraft developed an oil leak in one of its engines and was required to return to Kirtland Field. This necessitated canceling shot plans for that morning and preparing for replacement on similar schedule 24 hr later. Immediately following this 0300 briefing the CAA was notified of area flight limitations for private and commercial aircraft approaching the general Las Vegas area. The scheduling of the test series was originally established with weather conditions as the primary controlling factor. After the first shots were dropped on consecutive days, Jan. 27 and 28, it was agreed that the physical strain on the personnel involved was too great to exceed more than two drops on successive days. The weather conditions cooperated with this conclusion on the following days with the result that the third shot was deferred until Feb. 1. When the favorable weather conditions were sustained into the next day, it was possible to follow with the fourth shot just 24 hr later. The date for the final shot was originally established for Feb. 5, allowing time for specific approval for it from the Commission in Washington. The shot was later moved to the next day because of the aircraft operating problem described above.

In a technical report more specific details of the procedure leading up to the final drop over the target are presented.

The actual drop time varied from test to test but usually was during the predawn minutes between 0545 and 0600. As soon as the detonation was observed at Nellis and at the control points, the communications system became highly active, and the reports were received as to the preliminary effects. This information was, in turn, relayed by phone to Los Alamos and Washington.

The official visitors returned to Indian Springs after the drop and received breakfast at the construction mess before returning to Las Vegas. If an immediate departure was

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necessary, the departing planes were scheduled for take-off at Nellis as soon as the nature and direction of the radioactive cloud was fully known and flying was considered safe. This condition usually existed by approximately 0900 when reports from the tracking aircraft and the radiological monitoring teams had been received at the headquarters. Because of the pressing training program at Nellis and because of the inconvenience to commercial and private aircraft, special attention was given to reaching this "all-clear" status as soon as safely possible.

Attention was usually turned to public reactions by midmorning. During the early hours the Information Office at the El Cortez Hotel received countless calls from press and radio representatives and from private citizens concerning the detonation that they had either observed, or failed to observe, earlier that morning. In the case of the fourth and fifth shots, reports of glass and plaster damage began to be received at about this time, and preliminary investigations were made by representatives of the test staff to determine the extent of damage.

Following the final shot on Feb. 6, public contact was extended to include a call to the Governor of Nevada, indicating that the series of tests had been completed, and at noon a press release for general consumption offered the same information.

Additional operating problems were frequently on the discussion agenda during this pre-noon, post-shot period. An example was the concern over alleged damage to photographic materials at the Eastman plant in Rochester, N. Y., following the first two tests. Newspaper reports and rumor reached appreciable proportions in describing this damage. Following a meeting with the Consulting Committee at which it was decided that the true degree of damage should be determined by qualified AEC personnel, the Washington office was contacted, and arrangements were concluded for qualified personnel to visit Rochester and confer with Eastman officials.

1.7 COSTS

An entirely complete cost-accounting record of this Operation is exceedingly difficult to obtain since personnel and equipment from a number of regularly operating organizations were diverted for use during this program and since their accurate cost cannot be secured. A costing system, however, was established at the outset of the Operation, and reported costs were accumulated before and after the test series. In a cost report for the Operation dated Apr. 30, 1951, the cost for the test program is shown as \$1,664,936, excluding the cost of source and fissionable materials. The organizational breakdown of this total is as follows:

Los Alamos Scientific Laboratory	\$128,371
Sandia Corporation	600,000
Edgerton, Germeshausen & Grier	52,550
Naval Research Laboratory	27,000
Military Support Services	31,523
AEC-SFO	168,158
Robert McKee, Inc.	657,334

Additional cost figures are being accumulated, and it is probable that even under this limited system the total cost as reported will be approximately \$2,000,000.

1.8 ROLL-UP

Prior to the final test drop, meetings of the entire staff were held to plan assignments and procedures for the roll-up of the Operation. Responsibility for roll-up action was assigned to each of the organizational unit heads with coordination responsibility in the hands of the Executive Officer. The first move in preparing this action was to obtain authorization for continued use of Air Force facilities at Nellis and Indian Springs. In fact, a letter was addressed to the Nellis Commanding Officer as early as Jan. 30, 1951, indicating that the AEC intended to proceed immediately with the construction of permanent establishments in its area

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of the Bombing and Gunnery Range and that, since no facilities were available other than at Indian Springs, within 70 miles of the work area, the continued use of Indian Springs was requested. This request called for 15 barracks, 2 latrines, 1 mess hall, 1 shop building, and 1 warehouse. The Air Force was assured that these buildings would be turned back in as good or better condition when the Commission's requirement was satisfied on approximately Oct. 1, 1951. In addition, a request was made for continued use of the administrative building at Nellis so that the AEC communications system could remain intact and the balance of the building could be used for storage purposes. These requests were immediately granted by the Commanding Officer on Jan. 31, 1951, and these remaining facilities were utilized in concluding Operation Ranger and in constructing permanent facilities for future operations.

A problem in the roll-up procedure was the guarding and radiological safety of the test site after the Operation. It was concluded that the use of fencing would be more desirable than the extended assignment of guards and monitors to the area. If the radius of 10 mr after one week was too extensive for fencing, guards would continue to be used. It was agreed that, under expected conditions, no security problem would be involved. In order to ascertain that no radioactivity remained in the general area, it was decided to assign two teams of monitors for the general vicinity of the target area and one resident monitor at the site. In view of the future use of the proving ground, certain radiological safety equipment was to be stored in the Las Vegas area, and such storage was obtained through use of the Air Force facilities.

It was decided that radioactive metal would be hauled out into a burial ground about 4 miles away. The vehicles utilized in the test area would be decontaminated through use of a portable steam machine prior to leaving the area.

In view of the early date for the overseas test operation it was imperative that certain instrumentation equipment be removed from the site and shipped at the earliest possible date. Consequently, a representative of the unit using the equipment would immediately draw up plans for its packing and shipping and would remain with the equipment until it was placed aboard a designated truck or plane.

Other matters of roll-up planning and execution included such items as the following:

1. Return to the Air Force of flying clothing used by the visiting officials.
2. Return of beds and furniture borrowed from the Air Force to accommodate test personnel.
3. Inspection and return of vehicles rented from private companies.
4. Establishment of proper controls for disposition of both AEC and LASL property assigned to the test program.
5. Arrangements for outgoing travel for test personnel following completion of their roll-up functions.
6. Scheduling of guard-post deactivation as equipment and personnel were removed from the test area.
7. The collection of all classified material and its packing for shipment.

In the interest of adequately recognizing all personnel in the various organizations that participated in this program, one of the roll-up functions that continued over an extended period of time after the tests was the preparation of letters of appreciation from the Manager, SFO, to the individuals and organizations involved. The teamwork of these individuals who were brought in from a variety of assignments on short notice was most outstanding, and there was ample evidence that everyone assigned knew his job and was prepared and eager to perform it effectively in the interest of the total program.

1.9 CLAIMS

One unexpected aftermath of this Operation was the receipt of a number of reports of damage to various buildings in the Las Vegas area. As indicated previously, these reports were first received following the fourth shot and appeared with greater frequency following the fifth shot. An AEC representative was immediately assigned the full-time task of visiting the homes or business places which had reported glass or plaster damage. Specific information concerning the alleged damage was recorded, and the owner of the property was informed

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that the AEC intended to take early action.

There followed an intensive study of existing statutory authority for the payment by the government of claims of this type. Two members of the Atomic Energy Commission legal staff at Los Alamos made a detailed analysis of the legal problem and concluded that settlement under the Federal Tort Claims Act in these cases would be within the administrative discretion of the Commission. This judgment was subsequently supported by the Commission's General Counsel and representatives of the Department of Justice. While the research as to the administrative authority was being conducted, the actual procedures to be followed in adjusting claims were explored by SFO personnel with the Chief Claims Examiner of the Commission.

Publicity given to the damage cases at Las Vegas had caused some concern within the insurance industry, and representatives of the National Board of Fire Underwriters called on the Commission to offer cooperation in the adjustment of claims. On Mar. 9 the General Adjuster of the National Board of Fire Underwriters and the Assistant General Manager of the Pacific Coast Department of General Adjustment Bureau, Inc., visited Los Alamos for the purpose of generally discussing the claims problem. When legal authorization to proceed under the Federal Tort Claims Act was received, the situation was reviewed, and the files on 95 claims received to date were examined. From these actions it was concluded that only by securing the services of someone in the adjustment business could these claims be efficiently and expeditiously closed. Consequently, the decision was made to negotiate a contract with the General Adjustment Bureau to perform this service for the Commission.

The Bureau went to work immediately on Mar. 29, and, although their work has continued, the great bulk of the claims was handled within the first 10 days. Up to June 6, 1951, 131 claims had been received and processed by the Bureau. It is anticipated that no further claims will be received, since a public announcement was made on May 3, 1951, that no further claims would be received by the adjusting service after May 4, 1951. Of the 131 claims, 9 were settled by releases given gratuitously as a patriotic expression on the part of the claimants, 111 were settled for a total expenditure of \$14,226.20, and 11 remained unsettled.

This experience should prove profitable to those charged with conducting future test operations at the Nevada Test Site. It is recommended that a member of the test staff be assigned to immediately investigate alleged claims and that a contract with the General Adjustment Bureau be continued so that the adjusting service can be provided for the Commission by an organization with personnel trained in this type of operation.

1.10 GENERAL CONCLUSIONS

As stated previously, Part II of this volume includes detailed recommendations as the various phases of the test operation. Consequently, the conclusions and recommendations given here are of a more general nature.

1. In preparing for future test operations a preliminary step should be the development of a sound organizational structure at the earliest possible date. This structure should be precisely described, and organizational assignments within it should be formulated to ensure complete understanding by the personnel involved. Since organizational relationships must, because of the nature of test operations, be complex and yet flexible, a clear definition of the relationships should be obtained at the outset.

2. In view of the current plans for extensive test operations in the future, it is recommended that the following positions be created on a continuing basis: (a) Field Manager, Nevada Test Site, charged with full-time continuing responsibility for the operation and maintenance of the test area and with supplementary responsibility for providing administrative and service support during test periods; and (b) Test Director, on the staff of the Manager, SFO, charged with responsibility for representing the Manager in relationships with LASL and military organizations and in coordinating the participation of all units assigned to test activities.

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ADMINISTRATIVE SUMMARY REPORT

3. Aside from permanently assigned personnel on the staff of the Field Manager, it is recommended that test assignments for regular SFO personnel be established as far in advance of the tests as possible to permit the planned detail of such personnel from their regular work to the test assignments.

4. In the interest of greater efficiency and less loss of time it is recommended that test personnel be housed at a point near the test site rather than in the hotels of Las Vegas. The presently planned operating camp is intended to meet this recommendation and to consolidate in a single convenient location, under complete AEC control, all personnel and functions that were distributed between Nellis, Las Vegas, Indian Springs, and the control point during Operation Ranger.

5. A permanent communications system, as recommended by the Communications staff following Ranger, is in the process of design and installation to ensure reliable and efficient communication service for future test operations.

6. The problem of handling visitors, both official and unofficial, will present itself to future test organizations. It is recommended that a single member of the Test Director's staff be assigned full-time responsibility for planning and executing a systematic process for handling the transportation, briefing, housing, feeding, and security processing of all visitors. If at all possible, an arrival site closer to the test area should be obtained to avoid the extensive traveling involved in connection with observing the Ranger tests.

7. The outstanding effectiveness of the advisory Consulting Committee in assisting the Test Director is ample support for repeating this procedure in future operations.

8. Greater operational efficiency can be obtained through closer physical relationship with the communications center, the weather forecasting staff, the radiological safety teams, and the Air Force tracking control room.

9. Although the McKee organization responded effectively to maintenance and cleanup operations between tests during Ranger, it is recommended that the maintenance staff of the permanent installation be utilized for this purpose in the future.

10. Although the frequent briefing sessions were productive of information and decisions, in future operations it should be possible to reduce the size of attendance at these meetings and to conserve personnel time.

11. The use of motor vehicles procured from rental agents for personnel transportation was successful at Ranger, but it may be possible to save money in the future if the permanent AEC organization at the test site is assigned government vehicles to be operated and maintained by the maintenance contractor.

12. The security activity for Ranger was conducted without any serious security breach. It is recommended, however, that a permanent security adviser be located at the test site to develop continuing plans for the safeguarding of the area; this adviser should utilize detailed personnel from Los Alamos during the operation.

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Part II

DETAILED ORGANIZATION AND OPERATION

2. OPERATIONAL PLANNING*

2.1 MILITARY SUPPORT AND OPERATIONS

2.1.1 The Problem

One of the first operational-planning problems was to obtain the necessary support for Operation Ranger in terms of personnel, logistics, operational facilities, and equipment from the Department of Defense.

2.1.2 The Ranger Solution

Meteorological Data. In order that the AEC tests could be conducted with the maximum safety to the public, it was necessary that accurate, up-to-the-minute knowledge of prevailing meteorological conditions be known with competent forecasters and analysts available. To accomplish this mission, the USAF Air Weather Service was requested to assume this work. Facilities for obtaining upper air winds to 40,000 ft were established at Beatty, Nev.; Nellis AFB, Nev.; and Indian Springs AFB, Nev. The Weather Central was located in the Base Operations Building, Nellis AFB. Sufficient AWS personnel under the direction of Maj. D. H. Russell, USAF, were provided from the 2059th Weather Wing, located at Tinker AFB, Okla., to establish and operate the Weather Central on a 24-hr basis.

Briefings were held at 1300 and 2000 daily for the Ranger Staff on the past, present, and predicted weather conditions for the target and downwind areas. Of most importance were the forecast winds over the target and downwind plus the presence or absence of precipitation for the post-shot period downwind. The information furnished by the weather section was then evaluated by the Consulting Committee who advised the Director of Operation Ranger of the feasibility for operations on the following morning.

For future tests a weather-reporting station is being set up at the control point to operate continuously in the future, gathering winds aloft data to serve as background information. It is recommended that future tests be given the very satisfactory weather service which existed for Operation Ranger.

Drift, Composition, and Intensity of Radioactive Cloud. A knowledge of the direction of drift, composition, and intensity of the radioactive cloud was required. To perform this mission, USAF aircraft were used. Cloud tracking was performed out to a radius of 500 miles from zero, and plots were made of the path and dispersion of the cloud vs. distance from zero. The plotting and control room was located in Ranger headquarters. Aircraft primarily concerned with this work were based at Nellis AFB for the duration of the tests. Since most of the details of this operation are classified, a separate report will be submitted on the subject by the agency performing the work.

From an operational viewpoint it is recommended that these services be obtained from the same source for this purpose in any future tests.

For the future it is considered highly desirable that space at the control point be provided for the operational control requirements of the cloud-tracking group. A location near the Weather Central is suggested.

*Submitted Feb. 26, 1951, by memorandum from Lt. Col. William R. Sturges, Operations Planning Officer, to Carroll L. Tyler.

Aircraft. The Special Weapons Command (SWC) located at Kirtland AFB, N. Mex., provided the airlift needed for the conduct of Operation Ranger. Bomb requirements were coordinated with Sandia. The aircraft bombing crew furnished for the job conducted every drop and turned in a splendid performance. B-50 planes were the operational aircraft. B-25 aircraft were used for liaison and film courier duty. The requirements for additional aircraft for special air missions concerning visitors were met by SWC. Future operations should utilize the services of the SWC as fully as was done during Ranger, with the possible exception of special aircraft for non-AEC functions. These requirements can be met in the future, but closer coordination is mandatory in order that SWC not be stripped of all its administrative aircraft. The helicopter aircraft furnished by the SWC were a vital factor to the successful completion of Ranger. These craft were used as mobile radiological monitors, personnel carriers, and survey planes.

Emergency Evacuation. (See Sec. 2.2.) Transportation facilities were required to be available on call in the Las Vegas area should evacuation of a community become necessary. Company C, 82nd Battalion, 2nd Armored Division, Fort Hood, Tex., was placed on bivouac and field maneuvers near Las Vegas, Nev. The Company was composed as follows: 5 officers and 150 enlisted men, less the normal tank complement. Substituted were ten 2½-ton trucks which could double as personnel carriers. The vehicle complement included 25 jeeps, 5 of them radio-equipped; 1 large wrecker; 1 ambulance; 18 trailers; and 5 half-tracks. This Company was utilized to the maximum possible with the inherent limitation that none of the Company was Q-cleared. Transportation and guard functions were primary duties for the Company. Prior to each shot the full alert was given so that a march to an evacuation area could take place without delay.

For future operations it is not believed desirable to obtain the services of a troop such as Company C, since their primary purpose of emergency evacuation was not realized or necessary. It has been established that the radioactive hazard is such as to alleviate the need for such a stand-by unit.

Physical Facilities. Operational facilities were needed so that the rapid build-up in personnel and activity could be realized in the time limit allowed. The Nellis AFB officials were very definitely helpful in satisfying physical needs on the Base. It is inconceivable that the Operation could have been conducted successfully without the enthusiastic support furnished by them. Building 926 was turned over for the Ranger headquarters. The entire Base staff was called upon to assist in each field of requirements—office equipment and supplies, housing, bedding, aircraft, and communication facilities.

For future operations, accommodations for housing and messing are to be obtained from the existing facilities at Indian Springs AFB. The runways at Indian Springs can accommodate large aircraft but are not constructed for heavy operational use. Either Nellis facilities must be used for staging aircraft, or the necessary improvements must be made to Indian Springs AFB. For liaison and courier aircraft the present runway strengths are adequate. In the event that more use is expected, refueling units must be stationed at Indian Springs; there are none at present. Building 926 at Nellis is being held for future use by the AEC, and all the communications facilities are being kept intact. All requirements of Nellis must be coordinated with the Commanding Officer, Nellis, in advance of the expected delivery date so that planned action can be taken to satisfy these needs.

Although written expressions of helpfulness were received from other Department of Defense agencies, no requirement existed for their support. Advisory letters were sent to the Commanding General, Sixth Army, and the Commandants of the Eleventh and Twelfth Naval Districts.

Future requirements as needed should be well coordinated with the Department of Defense agency concerned prior to the expected delivery date to allow proper staff planning and action.

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2.2 EVACUATION PLAN

2.2.1 Introduction

A generalized plan was formulated for use in the event that civilian and/or military persons might be required to evacuate areas contaminated by excessive radioactive-cloud fall-out. This plan was conceived in detail prior to the detonations and was essentially in the form given in Sec. 2.2.2.

2.2.2 Evolution of the Plan

In order that adequate measures may be taken to protect the people from undue hazard due to fall-out of radioactive debris in the populated areas, radiological monitoring teams will be operated from many points in the downwind fall-out areas. These teams will operate under the direction of radio-control centers located at Caliente, Nev.; Cedar City, Utah; and St. George, Utah. A C-47 aircraft will be flying at low altitudes in the downwind areas with monitoring equipment aboard. If background readings increase over a given area, radio contact will be made with the radio-control centers. Suitable instructions will be given to a specified rad-safety team who will then go to that area to perform more careful examination. In the event that readings become high enough that the established maximum of 25 roentgen units per 30 days integrated dosage is likely to be exceeded, it will be mandatory that the population of that area, if any, must be removed to a safe location expeditiously.

In order that this removal may be accomplished, Company C, 82nd Battalion, 2nd Armored Division, Fort Hood, Tex., has been dispatched to bivouac near Nellis AFB for the duration of Operation Ranger. The tank complement of this Reconnaissance Troop has been deleted, and ten 2½-ton trucks have been substituted for use as personnel carriers. The Company is capable of moving 200 people per trip with moderate baggage. A reconnaissance by officers of the Company has covered the most probable evacuation zone, and they have forecast that any emergency evacuation can be successfully completed.

The responsibility for the decision to evacuate an area rests with the Director, Operation Ranger. Such decision will be made based upon the advice of the Chief, Radiological Safety Group.

Housing potential for southern Nevada is mainly centered in Las Vegas. This town has the attractive capability of tripling its population overnight, due to its many motels, hotels, and hospitals. Normally the population of Las Vegas doubles on the week end. It is felt that sufficient housing for evacuees can be obtained without serious delay in the event of an emergency.

There are five hospitals in Las Vegas, of which the largest is the Clark County Hospital, a 200-bed unit with 22 assigned doctors and 21 consulting doctors available on call.

2.2.3 Operational Plan for Evacuation

"Amber" Phase. Following an atomic detonation, a careful check of potential hazard of the downwind area will be made by a section of the Radiological Safety Group. Should populated area show signs of approaching the danger point, radiationwise, advice will be given to the Director of Operation Ranger of this condition. It will be the prerogative of the Director to place agencies concerned with the evacuation on stand-by alert status. This will be the "Amber" phase of the evacuation plan.

"Red" Phase. In the event that the increase in background activity continues to rise so that a hazard exists, the Director of Operation Ranger will declare an emergency and direct the evacuation of the population in that area to a safe location.

The following actions will then take place in sequence:

1. The Commanding Officer, Company C, will depart from the bivouac area for the area concerned. The total resource in personnel and personnel-carrier vehicles of the company will be included in the forced march to the evacuation area.

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2. The primary town, city, or county involved will be notified by the Director of Operation Ranger, or his representative, that such an evacuation must be made. Assistance in the collection of the populace concerned for departure from the area will be given by representatives of the Radiological Group and the Operations Planning Officer of the Director's staff. It will be necessary that officials, as they are notified, direct the dispatch of vehicles from the Reconnaissance Troop to outlying sections of the community to which telephonic notification cannot be made. Every effort will be made to obtain notification to all people in the hazard zone as quickly as is possible. Assembly of persons affected and their moderate baggage will be made at a point designated by the Commanding Officer of the Reconnaissance Troop. An orderly withdrawal from the area will be made after it is certain that all inhabitants are present for evacuation. This may be checked by requiring each person to account for his neighbor. Upon being notified of the evacuation, each person will be given an AEC guest card which will entitle that person to housing and messing at the expense of the AEC for the period of the evacuation and will be given an estimate of the time away from home (dependent upon the magnitude of the radiological hazard). Sufficient guards, accompanied by radiological monitoring teams, will be assigned from the Reconnaissance Troop, for the protection of civilian property in the areas. Roadblocks will be established and scouting parties dispatched to make certain that no unauthorized persons enter the area. The convoy will depart as a group for the Las Vegas area.

3. Calls will have been made to all hotels, motels, and hospitals by the staff remaining at Nellis AFB to obtain accommodations for the number expected from the evacuation. The convoy will proceed to 817 South Main Street, Las Vegas, Nev., where directions will be given to each truck driver as to the disposition of his passengers. In the event that individual evacuees desire to utilize private transportation this will be permitted at their expense. Hospital attention at AEC expense will be given to those in need.

"Green" Phase. As soon as the monitoring teams report that the radioactivity has decayed to a level such that persons could be safely returned to their homes, notification will be given by means of telephone, radio stations, and newspapers to the evacuees concerning their return trip. The Reconnaissance Troop will then pick up its assigned passengers and assemble into the convoy for the return trip, under the direction of the Commanding Officer of Company C. Officials of the community will be requested to assist this emergency operation in all ways possible so that the necessary withdrawal may be accomplished with a minimum of discomfort and inconvenience to the populace. It is the responsibility of the Director of Operation Ranger to ensure the safe return of evacuees to their homes.

2.3 AEC-CAA LIAISON

2.3.1 The Problem

Another operational-planning problem was the effective control of all aircraft traffic near or in the area over which the radioactive cloud would pass. In order that this control might be realized, liaison with the Federal Airways Section of the CAA was necessary. Temporary coordination of air-traffic control was required during the periods of nuclear explosions. Suitable instructions had to be devised which would permit the maximum control of certain civilian aircraft which normally are not under continuing radio control. Such control was desirable to preclude the possibility of contamination of aircraft and exposure of passengers to a radiation hazard.

2.3.2 The Ranger Solution

The CAA Office in Washington was briefed on the problem and was requested to assist in planning traffic-control coordination between the interested Regional Offices of CAA and Operation Ranger personnel. Victor Kayne, Washington, CAA, and L. P. de Arce, Los Angeles Regional Office, CAA, together with T. L. Shipman and Maj. W. R. Sturges of Operation Ranger held a conference at Las Vegas on Jan. 22, 1951, to establish the necessary arrangements for

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the period of the AEC tests at Ranger.

At this conference, it was agreed that aircraft flight plans would be controlled as follows:

Any aircraft which proposed flight into an area bounded by the circumference of a circle of radius 150 miles with center at Caliente, Nevada, would be routed by CAA so that their flights would not cross this area. In actual practice, two sectors, originating at Indian Springs, were projected to the circumference of this circle, and the wedge-shaped sector so formed defined the control zone. This "control wedge" was altered as the cloud drift direction changed. The method allowed for close control of all aircraft with whom radio contact can be established. In the attempt to control other flights which have no radio contact with ground stations, the Salt Lake Air Traffic Control sent out a general warning instruction two hours in advance of detonation time to its outlying stations and airports to the effect that: "The AEC has advised that all pilots contemplating flights within a radius of 150 miles of Caliente, Nevada, between the hours of 6:00 a.m. and 12:00 noon, PST, on (Date) should contact the nearest CAA facility before starting flight for safe routing."

Concurrently with this conference, action was being initiated by the DMA to obtain with USAF representation an executive order establishing the airspace over the AEC site as a prohibited area, with the proviso that the AEC have authority to approve those flights over the "airspace reservation" as it deems necessary and desirable. The order was not sought to protect the AEC installations, as such, but for the reverse reason of providing protection to aircraft.

In spite of the good intentions on the part of some of the assigned Ranger personnel, confusion existed between the Salt Lake Control Office and Ranger headquarters for the first two detonations—a result of too many persons involved, with no one person assigned the sole responsibility. At the beginning of the third shot better arrangements were made, with the Operations Planning Officer for Ranger charged with the responsibility for the dissemination of all instructions, amendments, and clearances to Salt Lake Air Traffic Control Center.

Notice of impending operations was given to Salt Lake Control at 9:00 p.m. the evening before so that the necessary control arrangements could be made. This notice was given over an interphone drop which was installed in Ranger headquarters and which allowed monitoring of CAA operational difficulties during and following an operation. The code name "Operation Bluebird" was used to identify the source of instructions to CAA. An AACF Flight Service Interphone was installed for monitoring purposes. Arrangements were made with all CAA facilities to accept any message preceded by the code word "Short Timer" for fast relay by interphone.

2.3.3 Proposed Solution for Future Operations

1. Discussion with the interested CAA representatives concerning the impending operation should be held at an early date so that the necessary action for control can be taken.
2. For the purpose of liaison with CAA, a person Q-cleared and familiar with both AEC and CAA operations should be assigned the full-time duty and responsibility during an operation to advise CAA on all pertinent matters. The person should be one who has the confidence of both AEC and CAA personnel, and he should be allowed to operate on his judgment with the advice of the Radiological Safety Group, the Cloud Tracking Group, and meteorological forecasters. His knowledge of upper air winds and trajectories should be current so that applicable changes can be made in the control procedures in effect at the moment.
3. The Public CAA interphone drop should be continued if communication facilities are available so that, from monitoring this line, operational difficulties can be anticipated.
4. Another telephonic line is available as a private tie-line with the Los Angeles ATCC and Salt Lake ATCC. This line should be installed at the new headquarters to permit more restricted discussions to be held without publicly broadcasting, in effect, as is the case when instructions are given on the party-line drop.
5. A close link should be established between Operation Headquarters and Nellis Base Operations, since much of the flying involved in AEC activities clears through Nellis AFB.

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6. As was in effect during Ranger, no attempt should be made on the part of the Liaison Officer to participate in flight control. Only information concerning safe areas should be given to CAA, whose responsibility is the actual control of aircraft.

7. All aircraft serial numbers involved in an operation should be listed with the AEC-CAA Liaison Officer, and all changes thereto should be given him. Each aircraft can be cleared into the area or from the area only if the Liaison Officer is familiar with its mission and so advises CAA.

8. All other aircraft indirectly concerned in AEC activities (such as Special Air Mission (SAM) planes carrying VIP visitors) should be advised of a possible delay in leaving the area due to the presence of the radioactive cloud.

9. In general, the same control procedures should apply to all future operations. To ensure that radiological safety requirements are satisfied, it may be necessary either to increase the radius of the control circle or to change the geographical location of the center of the control circle, or both. Arrangements with CAA should anticipate such action.

2.4 OFFICIAL OBSERVERS

2.4.1 The Problem

The invitation, transportation, escort, and briefing of all official observers to Operation Ranger was another operational-planning problem.

2.4.2 The Ranger Solution

Protocol arrangements to handle the invitation of government officials, members of Congress, members of the Joint Congressional Committee for Atomic Energy, officers of the Department of Defense, and AEC officials were made by DMA, AEC. Two trips were made from Washington to Las Vegas involving the transportation of 35 persons. The problems encountered in arranging for the notification of and acceptance by the individuals were numerous, mainly because of the uncertainties involved in the timing of shots. Checks with the Director of Operation Ranger were made at least twice daily after the completion of weather conferences at Ranger headquarters in Las Vegas. The probability of having the test on a given date was discussed at these times in the attempt to make arrival dates and test dates coincide. This practice resulted in the successful attainment of the objective.

Each observer was given a confidential information bulletin upon boarding the Special Air Mission aircraft at the Washington Municipal Airport. This bulletin included a brief note on security, a tentative trip schedule, and travel notes of interest to the observers.

At Kirtland AFB, under the auspices of the SWC, the observers were given a scientific briefing by Norris E. Bradbury, Director of LASL, and an operational briefing by Brig. Gen. John S. Mills, SWC.

The flight from Kirtland AFB was timed for arrival at Nellis AFB at 0200 on the morning of the test. Following an intermission for a security briefing, coffee and cake, and issue of heavy flight clothing, the observers were transported by bus to the observation point. Protective glasses were issued to each person. A short bus ride to Indian Springs AFB permitted each guest to obtain breakfast. Hotel accommodations were obtained in Las Vegas for those of the first group of observers who remained for the following morning test. Transportation from Las Vegas to the observation point was made by bus, and again breakfast was served at Indian Springs after the explosion. On the first trip, arrangements were made at Nellis for the SAM flight to pick up its passengers at Indian Springs for the return flight to Washington. The second return trip for the observers was made from Nellis, since it was deemed advisable to delay the take-off until such time as any required statements for public release could be made by the AEC Commissioners. Departure was made the same day.

Unavoidable complications were experienced from desires of certain of the observers who required special transportation by aircraft to various destinations. Aircraft for these purposes

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were obtained from Kirtland AFB and Nellis AFB. Since these needs were not known in sufficient time, there was understandable delay in meeting them.

Coordination between the DMA and Ranger personnel was effected on all matters of mutual interest.

2.4.3 Proposed Solution for Future Operations

It is recommended that the Washington Office of the AEC, DMA, coordinate all observer matters with the agency in the field for any atomic test held at the continental site. Since the nature of the personalities involved requires Washington action, it is considered advisable that, prior to any expected attendance at a test, the DMA, with the assistance of SFO, compile a list of those people who should be invited in accordance with their responsibilities and position. An actual invitation should be extended on a RSVP basis, so that actual planning can be handled efficiently. Last-minute additions to or deletions from this list should be authorized by the DMA.

The problems connected with observers are important, although they are exceedingly difficult to solve in a hard-and-fast way. It is believed that the AEC should take the initiative in inviting observers rather than to permit ineffective control because of outside pressure.

The furnishing of heavy clothing for observers at Ranger resulted in the loss of three flight jackets and two pairs of flying boots. It is considered reasonable and proper for future operations that each observer be advised in the information bulletin, furnished him prior to the trip, of the weather conditions to be expected and that suitable clothing should be part of his responsibility.

It is suggested that the DMA prepare an information bulletin for use in future dissemination to prospective observers. In this bulletin an itinerary should be given which is as complete as possible, covering the entire trip to and from Washington. The furnishing of such an itinerary implies very careful coordination with the field agency conducting the test, in the determination of that agency's capabilities and limitations in providing the required services and protocol. One of the fundamental purposes for the itinerary is to obviate any uncertainties regarding housing, messing, transportation, and arrangements for protocol. It is hoped that this action will dissuade the observers from taking matters into their own hands.

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3. COMMUNICATIONS*

3.1 TELEPHONE AND TELETYPE OPERATION

Telephone, Teletype, and Message Center operated on a 24-hr basis during Operation Ranger. The AEC Command Post switchboard processed 688 long-distance calls over a period of 27 days, averaging 39 outgoing long-distance calls daily with 96 per cent completion. Ninety-one messages were sent out of the Teletype Center.

The switchboard was a one-position Kellog, modified for dual operation. Installation and maintenance of telephone equipment was made by the Southern Nevada Telephone Company. Commercial TWX and Sigtot crypto-teletype equipment was installed and maintained by the Pacific Telephone and Telegraph Company.

Communications as a whole performed very creditably; however, it is recommended for future operations that more local and long-distance circuits be installed to expedite the movement of incoming and outgoing traffic. Also, it is recommended that a more established routine for the collecting, processing, and dispatching of mail be made for greater efficiency for future operations.

3.2 RADIO

The radio operation at Ranger was, on the whole, as satisfactory as could be expected. The HF radio contacts were very satisfactory, indicating that the power and types of antenna used were adequate. The same cannot be said of the VHF air-to-ground and mobile communications. Because of the terrain and area to be covered, adequate coverage was not possible from the Frenchman Flat area.

It is recommended that in any future operation HF radio equipment of approximately 400 watts be permanently installed in the flats adjacent to the control point and be remotely controlled. It is further recommended that the HF transmitting and receiving facilities be separated physically by 2 or more miles to allow satisfactory operation on adjacent frequencies. Additionally it is recommended that the VHF transmitting and receiving equipment be located on the most accessible high point in the Mt. Charleston area and remotely operated from the control point. This will greatly extend the VHF air-to-ground and mobile communications and considerably strengthen this portion of the radio-communications facility.

*Submitted Apr. 25, 1951, by memorandum from Richard L. Kennedy, Chief, Communications Group, to John W. Macy, Jr., Executive Officer.

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4. PUBLIC RELATIONS*

4.1 BACKGROUND AND OBJECTIVES

This section provides a partial record of the public relations phase of Operation Ranger, with sufficient analysis to provide a basis for conclusions and recommendations pertinent to future continental test operations.

From the viewpoint of public relations, Operation Ranger began on Dec. 22, 1950, when the Director of Information, SFO, entered into planning sessions on a recommended initial announcement, and has continued until the time of writing.

4.1.1 Background

Prior to Ranger there had been one continental test of the nuclear component of an atomic weapon at Trinity Site in July 1945. It was entirely secret in all respects until public announcement following the use of weapons over Japan. The test and subsequent press reports left a lingering fear of radiation dangers from continental tests, which were underlined by General Groves's hope that another continental test would never be held. The 1946 Bikini tests were observed by the press and others and were widely publicized. The 1948 Eniwetok tests were kept secret, being confirmed after their conclusion and with no description of the results until a very brief report months later. During late 1950 and 1951, Eniwetok tests had been announced with some details of the organization. The continuing test program at Los Alamos had never been discussed officially.

During the period from August 1945 until early 1951, the public had been subjected to a diet of Sunday-magazine sensationalized reports of atomic weapons. There had been created a mass fear of radioactive effects and perhaps a feeling that if one atomic bomb were exploded many cities in areas distant from the site would be disintegrated. Publication in late 1950 of "The Effects of Atomic Weapons" began the job of putting atomic weapons into perspective, but this had not had time to affect public attitudes materially. The public had no basis for differentiating between enemy weapons controlled by enemy scientists and test detonations controlled by American scientists.

The question of the public reaction to continental tests was a major factor in preliminary consideration of Project Mercury and Operation Ranger. Even after the scientists' assurances of safe operations were accepted, the question of public reaction remained a major factor in planning and, at least for the first tests of the series, in test direction. It was this situation which caused the Commission to advise the Operation Ranger Manager that the question of "human relationships" was all-important in the test project.

Although initially there had been some recommendations that Operation Ranger be conducted in full secrecy, it was quickly accepted that secrecy would stimulate unfavorable public reaction. This, plus the statement by scientists that the tests would be fully audible and visible, made it obvious that secrecy was impractical and unadvisable with regard to continental tests.

*Submitted June 15, 1951, by memorandum from Richard G. Elliott, Public Information Officer, to Carroll L. Tyler.

4.1.2 General Considerations

This situation and the general activity to meet it were recognized in the public relations recommendations made by SFO on January 3. The presentation then made included information as follows:

It is accepted that the semi-secrecy which has surrounded overseas tests and the full secrecy which has surrounded the continuing activities of the Los Alamos Scientific Laboratory Test Division cannot be applied in this instance. Public interest in atomic weapons and the public fear of atomic weapons indicate that considerable public concern may result from announcement of continental tests. Other factors may act simultaneously to condition public reaction: A public feeling that anything done to advance our atomic weapons position is the right thing; a probable public feeling of confidence in the AEC's conduct of the atomic weapons program; and the test program's history of human safety. It is accepted that a certain minority may vocalize against any continental tests. Public relations action probably cannot affect that fringe, but it can affect the reactions of a majority nationally and in Nevada.

It is believed that any national reaction can be conditioned by holding all announcements to such primary themes as:

1. The weapons program has progressed to the point that continuing tests are required to supplement the periodic, full-scale tests at Pacific Proving Grounds;
2. That continental tests reasonably adjacent to the Laboratory's experts are required for economy of time, scientific manpower, and money;
3. That such tests may materially benefit the nation's defense and safety; and
4. That the history of tests and of AEC production shows that controlled continental tests in remote areas are reasonably safe.

It is believed further that AEC-initiated information action should approach the tests matter-of-factly and not stimulate sensational attention by itself making too big a thing of them; and with regard to human safety it is suggested that too much reiteration may come under the category of the "the lady doth protest too much."

Local Nevada reaction will probably be more specialized, involving individual's concern for their personal safety, cattlemen's concern for their property, and perhaps Chamber of Commerce-type concern for effects on income and property. National activity will assist in this situation but a more intensive local activity is indicated. Individual safety must of course be the immediate and continuing theme, and it can be supplemented by every effort to educate the local people and also to satisfy their normal curiosity. Local pride in being in the lime-light (and the area concerned is highly aware of national publicity angles) and direct local participation in a major national activity may be injected into the situation.

The time for greatest public relations concern begins immediately prior to the first public announcement and will continue through the first test. The program planned should, however, continue through the series of tests, with any subsequent tests falling more into a routine category.

4.1.3 Public Relations Objectives

The broad, general objectives were only partially formalized, but they were recognized in planning and in action. They included the following:

1. Obtaining initially local-government and general public acceptance of atomic tests in Nevada and in the United States.
2. To avoid reactions, either local or national, which might interfere with conduct of the tests, by achieving public understanding and acceptance of the necessity for and safety of tests.
3. To develop a local public feeling of pride and participation to the point where blast damage would not bring public outcry; and to gain maximum cooperation from other individuals with property interests such as wildlife, cattle, etc.
4. To obtain local support and cooperation in the maintenance of security and in radiological safety activities.
5. To satisfy the public's real interest to the extent possible, but simultaneously to support fully the security of classified data and of national defense.

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6. To provide recognition, to at least a minimum degree, to the organizations and individuals connected with or participating in the program.
7. To support directly the Operation as follows: (a) by removing concern for unthinking public reaction from considerations determining the possibility or the timing of specific tests and (b) by achieving a public attitude which would result in full public cooperation with Ranger organization instructions in any emergency.
8. To demonstrate the practical safety of such test operations and to establish attitudes which would assist and support future operations of this type within the territorial limits of the United States.

4.2 AUTHORIZATIONS AND DIRECTIVES

The following official actions or expressed attitudes governed operation of the information and public relations programs:

1. SFO Project Mercury Public Relations Plan: The major proposals of this plan guided the Ranger staff throughout the Operation.
2. AEC Project Mercury, Public Information Activities: This memorandum was approved by the National Security Council's subcommittee and established a framework of approved policies, procedures, and operating details which governed major activities. It included the requirement that all issuances be coordinated by the field with Washington AEC and by it with other Government agencies.
3. Operation Ranger, Delegation of Responsibilities and Authorities, Manager, SFO, Jan. 17, 1951: This memorandum established Public Information on the Ranger senior staff and provided all authority required at the operational level.
4. Press Announcement of Site, Jan. 11, 1951: The contents of this announcement were officially approved at all required government levels; the announcement provided a basic document on the site and the test program, and also provided a rigid limitation on all subsequent elaborations.
5. A Memorandum to the Director of Information Services by the AEC Public Information Service, Jan. 23, 1951: This memorandum established the precise wording to be used in confirming detonations and in discussing radiological effects.
6. Authorization to Release Certain Information Material on Tests, Jan. 19, 1951: Public Information Services verbally authorized Ranger Information to initiate and release stories of a "non-weapons, non-Security" nature concerning the Las Vegas site and operation.
7. Photographic Coverage of Tests: There were no policies nor instructions initially. About February 1 the Director, Information Services, AEC, instructed the Ranger staff that none should be released. Following declassification of early test shots, the Commission twice authorized the Ranger Manager to release black-and-white or color prints, but subsequently, on February 5, Chairman Dean directed that all test photographs be held up pending Commission review and other governmental clearances. Another color photograph was declassified in May, and its public issuance was scheduled for late June.
8. Miscellaneous: All changes in previously authorized text or procedures were authorized verbally by Washington Division of Information Services. The Director, LASL, prior to the tests and prior to the final announcement requested that the tests be related primarily to the AEC in all aspects and that mention of the Laboratory be held to a minimum. It was directed that, as a routine procedure, all announcements or answers to press inquiries would be issued by the Ranger staff in Las Vegas.

4.3 PERSONNEL AND OTHER RESOURCES

4.3.1 Personnel

The program was directed throughout by the Information Director, SFO, assisted during the preliminary and operational phase by the Technical Information Adviser, LASL. The only

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office personnel available at the Las Vegas operation was an editorial assistant from LASL.

Full assistance was provided by AEC, SFO, LASL, and Ranger staff officials and specialists for various public relations contacts and appearances.

Classification advice and assistance was provided by the LASL Assistant Director for Classification and Security, who served as Test Classification Officer.

Division of Information Services provided material assistance at Nevada. The Associate Director participated in the preliminary announcement program. An Information Specialist held down the Las Vegas office in the period prior to the first detonation. The Director was present during the first three tests and provided invaluable guidance. Other Washington and Field Information personnel participated at Carson City and Reno in the preliminary phase. The Division's radio specialist stood by at Los Angeles for several days in the early test stages to provide radio assistance if required.

Basic Information personnel were assigned throughout to the downtown Las Vegas office, being fully required there and with insufficient strength to be represented consistently at the operational headquarters.

4.3.2 Other Resources

A large room was rented as an office in the El Cortez Hotel; this office was equipped with one phone through the hotel switchboard, two rented typewriters, and hotel-room desks. Mimeographing service was purchased locally. Western Union was used for delivery. Official communications were 9 miles distant at Nellis AFB and were inadequate for this office, solely because of location. Purchase of supplies was not provided for, other than by reimbursement on travel voucher or by shipment from Los Alamos. Daily rental automobiles were provided during the preliminary stage. Anticipating a shortage of transportation, two staff members' cars were driven from Los Alamos and used throughout the tests, one being reimbursable.

4.4 THE PROGRAM IN ACTION

4.4.1 Site Announcement Period to Jan. 12, 1951

Construction, which began January 1, and other operations were severely handicapped by a secret classification on the Project's relation to the AEC. Necessary delays in an AEC announcement caused use of a cover announcement through the Commanding Officer, Nellis AFB, which served briefly to misdirect press attention. Press rumors of huge new plants and new communities served, however, to arouse a "Chamber of Commerce-type" anticipation.

Selection of the site and its future purpose were announced January 11, simultaneously in Washington and Las Vegas. Great importance was attached to this, since its handling could help materially to establish the public confidence and spirit of cooperation and the official spirit of cooperation required for the tests.

Washington AEC notified the military, Congressional committees, and the Nevada delegation, and its Information personnel contacted the press and state government in Carson City and Reno, Nev. Washington Congressional officials in the days following supported the merit and the safety of the activity.

A party of SFO and LASL officials went to Las Vegas for the announcement. Manager Tyler contacted Governor Russell, and a sound relationship was established which still continues. County officials, newspapers, and other leaders were contacted in the county-seat cities surrounding the test site. City and county officials, the Chamber of Commerce, local Forest Service representatives, cattlemen, and newspaper and radio executives and staff members were contacted in Las Vegas.

Press, radio, Chamber of Commerce, civic and military leaders met with SFO and LASL officials the afternoon of January 11. These various activities were quite successful, resulting in good press and radio coverage and in having local dignitaries become salesmen for the themes believed important. These various individuals and groups subsequently acted

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practically on their own to counteract the isolated but potentially adverse trends which sprang up.

4.4.2 Interim Period to Jan. 25, 1951

A minimum of activity sufficed to satisfy test-area interest, but planned educational activity on test history, radioactivity, and safety was not carried out because of directives then existing, lack of time, and lack of qualified personnel in the area. Incorrect press reports of major construction brought a movement of workers to the area, which was stopped by a press announcement.

Assistance was provided for Security's efforts to contact individuals within the test area and to warn all migrants away. This was done through handbills, publications of maps and warnings, and Security and military teams. In this connection, an announcement warned of the danger of flights over the area.

The only personnel announcement of the entire test period was on January 25; this announcement named the higher levels of the Ranger staff and provided pictures and background information on the Manager, the Test Director, and the Director of Radiological Safety. By acquainting the public with the stature of the individuals concerned, this announcement built confidence and a friendly interest.

The interest of the Los Angeles area in Boulder Dam-impounded water flared up during this period, but the interest was quickly satisfied with assurances of no danger, which were helped by Dr. Stafford Warren, Director, Atomic Energy Project, University of California, Los Angeles Campus.

Through a staff misunderstanding, plans for Radiological, Information, and Security personnel to confer with county groups surrounding the test area did not develop. One such meeting, and it proved valuable, was finally arranged in Pioche, Nev.

4.4.3 Test Period and Roll-up to Feb. 8, 1951

Throughout the test period and roll-up, all available channels of influence and communication were used, such as press, radio, official and business groups, the military, etc. The major and primary channels available were, however, press and radio of Las Vegas, supplemented by wire-service coverage originating in Las Vegas. All of these media were extremely cooperative and provided excellent assistance in those few instances where, under the limitations surrounding tests, specific assistance was requested. Despite its cooperative attitude, press and radio themselves developed some concern. This was due to two main causes: (1) a city habituated to sensational news from divorces, gambling, etc., was now in the limelight, and all outside media were pressuring for sensational stories, which caused a cracked piece of plaster to be treated as city-wide damage, etc.; and (2) green and short-handed reportorial staffs, entirely ignorant of atomic energy and atomic weapons and, at the start, entirely without indoctrination. City residents themselves reacted strongly to exaggerated reports of damage, and this type of reporting was progressively reduced.

Approximately through the third test, all reporting originated in Las Vegas. Beginning then newspaper, magazine, and wire-service representatives began arriving. By the conclusion a fairly cosmopolitan group had collected. Some of the most factual, interpretative, and valuable reporting resulted from two or three members of this group.

Continuing contacts were maintained by the Ranger Information staff with local and regional press and with that of the West Coast on approximately a 20-hr-a-day basis.

The approved formula of confirmation of detonations was largely adhered to, although operational and public developments on occasion caused the content of announcements to be expanded beyond the formula's precise framework.

Various highlights of the activity are thumbnailed subsequently:

1. The editor of a paper in Goldfield, a town northwest of the site, was contacted originally by telephone. He later wrote Senator McCarran, expressing the community's apprehension. A Ranger Information Officer visited the editor on January 26 and discussed with him and his wife all possible phases of tests, radioactivity, reliability of scientific and

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administrative personnel, etc. That evening the editor and his wife contacted many local persons to assure them that the AEC had overcome their own apprehension and that they would not suffer from atomic detonations. The test on January 27 caused immediate concern, but individuals were as immediately reassured by this "oriented" segment of the town and from thence forward participated as very interested and nonapprehensive observers.

2. Security of information was protected against inadvertencies by instructions to all official test participants that all public information would be handled through the Information Office. This was enhanced by local residents' fullest cooperation, and to a considerable extent by their own participation in attempts to guard information concerning test personnel.

3. The handling of official visitors presented some problems informationwise. It was accepted that these visitors fell into two classes: those who could be expected to be contacted by the press and probably to comment; and those of AEC, military, etc., who could be expected not to comment. Such visitors were given copies of major announcements attached to an information kit which outlined classified data and permissible information. Awkward press handling resulted because these trips were secret and because local information people did not have authority to discuss their presence on a reasonable basis. All secrecy was, of course, dissipated in the two instances that rather important personages checked into resort hotels. Their presence was confirmed in each instance. All showed good discretion in their press contacts.

4. Radioactivity and human safety were continuing themes of press interest, but the simple statement that there was no danger sufficed. The simple statement was expanded considerably on February 2 when a low-level cloud from the detonation was observed heading over the Las Vegas area. Prompt statements resulted in dissipation of concern. The flurry of national interest in increased radioactivity throughout the east was reduced quickly once eastern AEC offices were authorized to issue reassuring announcements, and through the good offices of other scientists who confirmed that the radioactivity was not harmful.

5. Commercial airlines faced some problems in customer relations resulting from the tests. Procedures were developed by operations for the quickest possible clearance of individual airways and by the CAA for the use of alternate routes. A brief statement was developed for the use of air crews in advising passengers of the flight's delay. The necessary precautionary advice to airlines, usually issued about midnight preceding a detonation, resulted in the first breaches of secrecy on timing of tests, being picked up by radio stations and wire services. This was accepted as an unavoidable result.

6. The timing of tests was considered classified, but the necessary movement of personnel soon became a tip-off to Las Vegas persons. Advice to airlines (see item 5) was a direct tip-off. Noncoded radio communications and other operation activities gave considerable direct information on the operations, even such items as "bombs away." Classification authorities became convinced that there was essentially no breach of security involved in advance statements, but the pattern of no direct announcement was maintained until the final detonation. Because of expected blast damage, the Commission members present authorized a public warning which was, in effect, almost a direct announcement of the final detonation.

7. Blast damage, as has been related, was not present in the initial three tests but was widely and exaggeratedly reported by the press. Atmospheric conditions resulted in minor damage following the fourth and fifth tests. Prior to the fifth, public cautions were issued and were the final, successful step in achieving fullest public cooperation and sympathetic interest. This was helped by announcement that claims would be settled promptly and that the Chamber of Commerce had named a committee to assist with claims.

8. Because the conclusion of the tests would be made obvious by departure of personnel and because from a public relations viewpoint it was deemed sound to announce the conclusion and to thank the people of Nevada and their officials, the Commissioners present in Las Vegas authorized such a release shortly after the final detonation.

4.4.4 Follow-up Period to June 10, 1951

1. Blast-damage claims remained a subject of continuing interest, because the operational plan for quick settlement could not be accomplished. The claims were largely settled

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by mid-May, however, and no public relations problem developed.

2. The continuity of the test program, projected in many prior announcements, has been underlined by a continuing series of announcements concerning personnel of the Las Vegas office and announcements of permanent construction at the Nevada Test Site.

3. Farewell contacts were made with the Governor, other public officials, press, etc. These contacts have been continued as required, including the sending of much basic background material to press representatives who may be concerned in future reporting of test operations.

4. Unusual efforts were made to express the Manager's appreciation and commendation to all participants, including contractors, military, and personnel who handled details in home offices. A cartoon-type card was given to all actual participants.

5. At the date of writing, no official photograph of the Ranger Operation has been issued. Initial efforts to make one available to officials, solely as a public relations gesture, and to the Las Vegas area press were canceled in early February. It was subsequently planned to present Kodachromes of a declassified photograph to a limited public relations list, plus, of course, follow-up release to the press. This plan was modified to cover extensive Washington distribution to officials and sale to the general public, and a less extensive Los Alamos distribution to public officials and opinion leaders and to military, AEC, SFO, and contractor participants. The schedule provided for distribution by July 1, 1951.

4.5 CONCLUSIONS

4.5.1 General Conclusion on Results

The operation was handicapped by lack of availability of assigned and supporting personnel, by a general lack of experience in the problems of continental tests which handicapped the prior development of policies and directives, and by the quality of press and radio coverage out of Las Vegas.

Various valuable activities were not accomplished, such as prior and continuing indoctrination of residents of the area and their leaders.

Despite these handicaps, the broad objectives of the field-test-organization's public relations program were fully achieved. It is particularly pertinent to record the conclusion of the Test Manager and his Executive Officer that the public relations activity served to remove concern for public reactions from its pretest position of almost primary operational concern.

4.5.2 Detailed Conclusions

General Considerations and Objectives. The public relations approach planned initially, which developed logically from study of the situation, was carried out almost in detail, with the results then forecast. The eight specific objectives of the program were achieved to a measurable degree.

Authorizations and Directives. By the full effort and cooperation of all groups, echelons, and individuals concerned the test public relations program was largely successful, and as a result there is little disposition to criticize the handicaps which did result from application of some directives and the practical absence of authorizations. From the viewpoint of analyzing the first test series, however, so that recommendations can be soundly made for future series, such an analytical criticism is required.

Very broad and pin-pointed responsibility for the tests was delegated to the Manager, SFO, following Commission approval of the plan for the test activity. This presumably included the normal managerial responsibility for public relations and information. Acting on this authorization, the Manager delegated all requisite authority to a Public Information Officer.

A public relations plan for the tests was prepared by the Washington staff, separately from the test operations plan, and was approved through the National Security Council. It provided a method for selecting and approving the test Information Officer at variance with

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the method of managerial appointment for other staff members, which is noted but which in practice presented no difficulties. It also provided that, because of the importance to national policy and to the international picture of test information, "all issuances" had to be cleared by Washington AEC and other government officials as seemed indicated. By approval through very top levels of the detailed text of the initial announcement and of the confirmation announcement on each test, and by application to all issuances without exception, it limited severely the adaptation of official announcements to a situation which changed each day and which did not always permit a relatively slow clearance procedure. It, in effect, took the operational control of public relations away from the Test Manager and placed it with the Division of Information Services in Washington. Until subsequent modification, it served to prevent field personnel from performing educational, indoctrination, and spot-announcement actions valuable to the objectives. It also should be noted that photography was not touched on in any advance planning, and, as it developed, information-media activity was confined to the written word with official photographic coverage prohibited.

The procedure of establishing a basic statement for an announcement, for reply to certain foreseeable situations, and for termination is essentially sound where information activity has national and international security and political implications. Discretion and responsibility are essential, however, for the field operators, certainly as to the non-weapons, non-security aspects.

It is further concluded that careful advance consideration would make it possible to utilize the effective medium of still photography to a limited extent and so advance the public relations objectives.

Nothing in these comments should be interpreted as nonconcurrence in the full advance clearance of major statements or of full coordination.

Personnel and Other Resources. Personnel was insufficient for proper effective operation and would have been entirely insufficient if not supported by the loan of AEC Washington and field information personnel as well as personnel from the LASL Technical Information Office. A minimum of three information specialists is required, supplemented by a minimum of two secretaries of unusual ability, and can be supplied in the future by SFO and contractor staffs. Requirements for liaison with Washington Division of Information Services is such that consideration should be given to naming an individual from the Washington staff to handle such coordination, probably from Washington but possibly at the field office.

Declassification resources should be made available to Information by assignment of responsibility to a field representative.

Office, telephone, teletype, delivery, transportation, and supply resources need to be studied carefully in the light of experience, and more adequate arrangements should be made.

The Operational Program. Very little of the public reporting handled by local individuals served to advance the objectives of the AEC. Also the lack of permissible orientation was a hindrance to the successful completion of the objectives. Consideration should be given to more intensive indoctrination with information which is in the clear, both of area groups and of the press, and to the possibility of having the wire services represented during tests.

The handling of all operational information from the field headquarters appears sound, relieving Washington of this field responsibility.

Developments showed that absolute secrecy cannot be maintained concerning the time of tests; classification and security determined that such secrecy was not essential; and public relations results were enhanced in some instances when approximate timing was known. Industrial criticism developed in the East over an asserted lack of advance information about the tests and resulting radioactivity. Thorough consideration should be given to this question, beginning with announcement of the next program and of its first test, and as to time limitations on such announcements.

The semblance of inclusion of Las Vegas and Nevada people as actual participants was a sound approach, which should be continued.

The procedure of advance notification of key individuals, including area office holders, proved very efficacious and, in a modified form, should be continued. It has certain

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information flaws which require consideration, in that the persons so informed do not normally consider it necessary—and are not normally asked—to maintain the information as confidential until a specified hour. This results in AEC protestations of absolute secrecy to the press and in the clear distribution through other channels to the same press at an advanced hour.

The information-security briefing of all visitors and particularly of very important persons does not fully accomplish the purpose intended and probably can be strengthened. If it is accepted that some may comment publicly, the content of such comment as it pertains to classified matter might be more effectively controlled.

Press requests to "see" detonations were easily controlled but have been intensified already for "next time." There are strong reasons for permitting the local press to see a test, but performance is probably not possible because of the national demand for inclusion. It is believed that this desire will be satisfied as more press personnel happen to be on hand at the right hour in the right area, but outside the site. Local officials, such as the Governor, made no such requests, but as a matter of future public relations a selected few should be given consideration as VIP observers on selected occasions, in absolutely minimum numbers, if the past policy of permitting such visitors is continued. It will be recalled that SFO's original proposal was that only those actually connected with the program be admitted as visitors.

Lack of authority by law for prompt settlement of claims was disadvantageous to public relations. New procedures should be developed permitting recording of damage and claims during the tests and very immediate settlement thereafter. If this is done, foreseeable damage can be accepted as a calculated result without material public reaction.

The fear of radiation hazard was latent at Las Vegas and flared up nationally. It is believed that this can be overcome to the extent that it will be an immaterial element of future tests. It is also suggested that a system of nationwide radiation recordings, plus Washington and field-office announcements of modified data therefrom, might be valuable in the future. Planning should, however, accept the possibility of localized hazard in nearby communities and in areas such as Mt. Charleston, and operational plans should be drawn which include information activity. Consideration could well be given to advance publicity of such localized plans, including all due safeguards about the improbability of activation being required.

The procedure later followed for Operation Greenhouse, of a technical-related announcement very close on the heels of the test's conclusion, was not followed at Ranger but is suggested for full future consideration.

The extent to which employees of SFO and its contractors, and also of the Commission generally, can be acquainted with their place in the program and particularly with weapons results has been severely limited. It is suggested that some future consideration be given to making official bulletins and announcements on tests immediately available to the entire organization, and to the possibility of a newsreel-documentary type of photographic reporting for subsequent showing on a classified basis to employees with Q clearances.

4.6 RECOMMENDATIONS

The following attitudes and actions are recommended with respect to public relations planning for future continental tests.

1. The public relations phase of any future test program should be incorporated in the general program recommended to the Commission—not including specific details of manning, organization, or normal day-to-day procedures, but including the general approach and general objectives to the extent that they vary from the past—and should broadly define the manner and content of initial announcements, day-to-day confirmations and announcements, and follow-up announcements. This procedure will subject public relations to the same coordinations and approvals as other phases of the operation and, through any prior coordination and concurrences with the military, Congressional committees, and the National Security Council, provides the approval and expresses the framework within which activities can continue without detailed, subsequent advance coordination. It is specifically recommended

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that, with regard to the next test, this program incorporate policies and procedures on photography.

2. The public relations phase of the general test program should specifically establish public relations as the operational responsibility of the Test Manager. By modification during the concurrence and authorization procedure, Washington AEC can define any responsibilities withheld and can incorporate provisions for any checks which may be peculiarly necessary for public relations as distinguished from other operating responsibilities and which may arise from the impact of information on national and international affairs.

3. The following assumptions and considerations should be recognized in the future public relations planning:

(a) It is the goal of SFO to make continental tests a routine part of its continuing test program. The long-term expectation is that repetition will progressively reduce the sensational news value of such tests with the eventual result that public relations considerations and public relations activities can be reduced to a base level equivalent to the continuing operational and safety requirements. This goal will be supported by the official attitude that the tests are simply part of the routine continuing test program of SFO, LASL, and Sandia Corporation.

(b) It is accepted that national and international questions may be affected by the above-mentioned goal, and it may be desired on occasion to concentrate national or world attention on a certain series of tests.

(c) Secrecy is impossible with regard to the timing and fact of a continental test program because (1) it will probably be forecast by the Washington press; (2) movement of personnel into the area and necessary activities at Nevada Test Site will provide a local tip-off; and (3) the tests themselves will be visible, audible, and probably felt, and may on any occasion cause property damage in surrounding areas. Full secrecy is, in fact, not desirable in that it would restrict preparation for and conduct of the test, and by preventing the development of local public understanding and cooperation it would elevate the public-related problems of site, security, migrant safety, radiological safety, blast damage, and potential panic into major operations' questions. While Classification and Security believed that during the 1951 tests there should be no long-advance notice of the test program, it expressed no concern over announcements briefly in advance of a detonation. Subject to an evaluation by Intelligence, it is suggested that advance announcement be sufficiently specific to alert those with an interest, such as the photographic film industry, and that test management be authorized to announce specific tests briefly in advance if it believes such action operationally feasible.

(d) Location of the test site may be confirmed in the future inasmuch as the test area has not been restricted or controlled and the general test location will be publicly known.

(e) It is anticipated that national press interest in the next series may well be more intense than early in 1951 which, together with a more blasé and oriented local press, will pose additional public relations problems, including a more determined and perhaps descriptive reporting. Control of newspaper men will be materially more difficult, and efforts to approach the test site for reporting and photography can be anticipated. This situation can be counteracted but only partially during the test series. It is hoped that it will be of decreasing importance in the next and subsequent series.

(f) The AEC will benefit from a more objective and sounder type of reporting from Las Vegas for the national news services. Methods for obtaining the assignment of capable reporters (for example, Clint Mosher for the INS) should be studied and adopted if possible.

(g) The latent local and national fear of radioactivity can be allayed, under routine test circumstances, by recognizing the fact and proceeding on a planned basis to educate those concerned. There should be more public orientation in the test area, and there could well be announcements of more details of interest locally following each shot. Industrial implications will be recognized by prior announcement. In addition, it is suggested that the AEC announce, prior to the next test program, that increased radioactivity will be experienced over many areas, summarizing what happened last time and perhaps announcing that the Commission will officially keep track of, and will announce, radiation levels at various centers. Radiological

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safety will presumably develop notification and evacuation plans for Nevada and adjacent areas, and it is suggested that such plans may well be discussed publicly.

4. At an early date, the Director of Information, SFO, should be designated as the Information Officer of the SFO test program and should be authorized and instructed to plan and conduct the public relations activities, including any required liaison with public, military, and other government groups.

(a) The organization of the Information Officer should be composed of an Information Assistant and a Technical Assistant, and necessary secretarial and stenographic assistance, all to be drawn from SFO and its contractors' staffs, and to be supplemented as required by other technical-information and classification assistance from the same sources.

(b) The Washington Division of Information Services should be invited to designate an individual of its staff as Field Test Management Liaison Officer to serve during the test either in Washington or attached to the Test Management staff as future developments may indicate.

(c) The AEC field information personnel and/or Division of Information Services personnel should be called on for assistance as may be required.

5. The facilities made available to Information should include an office in Las Vegas; consistently available telephone communications with test headquarters at peak periods; and other required office equipment, transportation, and supplies.

6. The intent of programmed operational and organizational planning and of authorizations and directives with regard to continental-tests' public relations should be to accomplish the following objectives:

(a) Establish public relations as a continuing operational responsibility of the Field Test Manager, consistent in such delegations with the other operational responsibilities assigned by the Commission.

(b) Establish by prior approval in broad outline the general policies, approach, and procedures so that field personnel will know in advance the area within which they can operate from day to day.

(c) Establish no additional checks or procedures except in designated instances and except when clearly determined that the information activity is in such respects peculiar among field test operations.

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5. SECURITY*

5.1 GENERAL OPERATIONS

Security was first notified about the middle of December 1950 of impending operations at the Nevada Test Site. Preliminary conferences with other interested divisions, offices, and LASL personnel indicated that, besides the construction workers who would be involved initially in the preparation of the site, there would be a low minimum number of Laboratory personnel and presumably few visitors of an official or semiofficial nature.

With this information as a basis, a preoperational survey was made of the area by the SFOO Inspector and Survey Division, together with representatives of the principal contractors, SFOO Office of Engineering and Construction, and members of the LASL Health Division. Basic permanent guard posts were selected, and requirements for fixed and mobile radio stations were set forth. Recommendations were also made at this time for the activation of air patrols, the establishment of a Security office for purposes of visitor control, etc.

At approximately the second week in January the Manager, SFO, and members of his staff, together with LASL key personnel and Information personnel from Washington, D.C., arrived in Las Vegas to coordinate and explain the press release from Washington, which was the first public announcement of the impending test program. At this time Security personnel made preliminary contacts with the Sheriff's office, the local Federal Bureau of Investigation (contact with the SAC of the Salt Lake City Office having been made sometime prior to this through the Office of the SAC in Albuquerque, N. Mex.), the local police, county officials, and other parties whose aid might conceivably be solicited for the operation.

Security personnel, with the advice and consent of Laboratory personnel, designed and built an underground vault for the storage of SF materials during nonoperational periods. The vault was located next to a fixed guard station for economy of manpower.

Prior to the first test it became apparent that the number of visitors was going to exceed by far the original estimate. Due to the unavailability of laminating and photographic equipment which could be located at Las Vegas on such short notice, additional operational and visitor's badges were prepared at Los Alamos and flown to the site.

Probably one of the most irritating problems confronting Security personnel during the tests was that of visitors arriving at Las Vegas with no clearance data. This required heavy phone traffic to the visitor's home station at all hours of the day and night in order to verify basic clearance data.

Insofar as possible, all visitors were collected at 817 South Main Street, Las Vegas, lectured, loaded into buses, and taken directly to the site, where they witnessed the operation. They were then returned by the same means to Las Vegas. VIP's arriving from Washington, D.C., were, in some instances, met by buses at Nellis AFB, where they were briefed, issued warm clothing, and taken directly to the site.

5.1.1 Guard Force

Guard-force security activities at the test site began during the preliminary construction period when one station was operated during normal working hours. This station (later Station Dusty) was placed on 24-hr operation on Jan. 10, 1951. As additional material was

*The material presented in this section is based on a report submitted Feb. 28, 1951, by William J. McElwreath, Chief, Security Group, to Carroll L. Tyler.

moved into the area a second station (Station Osage) was activated on Jan. 11, 1951. This process of growth continued until the first test when the following stations were manned:

Station	Location	Inspector personnel	Hours per day	Purpose
Apache	Yucca Pass	2	24	Control access to Frenchman Flat from the north
Control point	Control pt.	1	24	Control access to control-pt. bldg. and safeguard classified material
Choctaw	Control-pt. building	1	24	Communications center
Dusty	Frenchman Flat Pass	2	24	Control access to exclusion area from the south and safeguard underground vault
Osage	Between Hwy. 95 and Dusty	2	24	Screening station for controlled area south of Station Dusty
Piute	Indian Springs ABF	1	24	Protective-force hdqrs. and communications center
Eagle	Security areas	1	0700-0900 1500-1700	Aerial patrol
Cherokee	Nellis AFB	2	24	Control access to Bldg. T-926 and safeguard classified material
817 So. Main	Las Vegas	1	Nonworking hours	Safeguard classified material and assist in visitor control

By this time the guard force had grown to consist of the following: 32 Security inspectors from Los Alamos, N. Mex.; 10 shipment specialists from Sandia Base, N. Mex.; and 1 automotive adviser from Los Alamos, N. Mex. This provided a total of 43 inspectors. Thirty-five of these were needed to meet the normal station requirements. Three more were used as shift supervisors. The remainder were engaged as special escorts of classified material or in intermittently escorting one or more of the following groups: U. S. Engineers, Holmes and Narver engineers, local well drillers, local cattleman and his cowboys, and land appraisers. A recurrent motor patrol was performed in the vicinity of the blockhouse when security warranted and safety permitted. Security personnel were also utilized to drop warning leaflets from helicopters at the natural points of entry to the security area.

On test nights Security personnel established roadblocks in conjunction with the local Sheriff's office. These blocks were located on Highway 95 at Cactus Springs and at a road junction 16 miles east of Lathrop Wells. It should be noted that these were established on recommendation of the Health Division for safety rather than security reasons.

Two stations were initially manned beyond the control-point building at the request of the Health and Safety Group. As soon as practicable these stations were turned over to McKee personnel, since these stations were a safety rather than a security function.

The construction period provided heavy vehicular traffic to the Security stations from 0500 to 1800. The peak load came at the hours 0530 and 1715. When the tests were started, this peak load came on test nights at 0430 and again at 0615. Entry through Security stations was authorized to operational-badge holders. There were 570 of these operational badges issued.

In addition to the operational personnel there were 156 visitors from the AEC, Army, Navy, etc. These visitors were escorted from Las Vegas to Station Dusty where they were placed in an observation area. Here they were issued safety goggles and given an orientation lecture by Security personnel.

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The distances between stations (from Apache to Piute was about 45 miles) resulted in some difficulty with radio reception. This was overcome when all stations but Apache were placed on a telephone network. The use of the patrol aircraft and helicopters greatly facilitated the observation and patrol of the extensive security area.

5.1.2 Communications

Radio Facilities. The Security radio network in the Las Vegas area was expanded from a total of four radio-equipped vehicles on Jan. 4, 1951, to a maximum of seven mobile, five fixed, and one air-borne radio station on Jan. 20, 1951.

Telephone Facilities. Telephone equipment was installed in six Security stations during the period of the operations. Main telephone switchboards were located in two of these stations.

Operation. A very brief communications procedure was prepared and put into effect to establish standard procedures and circuit discipline, to protect security of information, and to name Security stations and prominent landmarks for the purpose of passing of specific operational information.

Radio and telephone security checks with outlying stations were made each half-hour from the net-control station from January 11 through February 8. This net-control station was first located at Indian Springs; net control was transferred to Station Choctaw at the Frenchman Flat site on January 26. Since it had a wide communications coverage of the Indian Springs - Frenchman Flat area, Security assisted the other organizations in the area by passing operational traffic for them. It is believed that a substantial number of man-hours and vehicle miles were saved by this cooperation.

Auxiliary power units and radio-equipped vehicles were used where necessary to maintain radio communications from fixed stations and roadblocks.

5.1.3 Classified Information and Material

All documents classified Top Secret used by the operating personnel of Ranger were transported between Los Alamos and Las Vegas by being placed in double envelopes, sealed, and addressed to the sender from Las Vegas or Los Alamos to himself upon arrival at his destination. These documents were in the custody of authorized AEC couriers until final disposition—that is, when the documents were again in the custody of personnel responsible for them. Top Secret materiel was transmitted to and from the Operation Ranger vault, under armed escort, by Carco's Lockheed Lodestar plane. Escorts and couriers were armed with .38 caliber side arms and Thompson submachine guns.

Documents classified Confidential or Secret were placed in three-way-combination 1-hr-heat-resistant steel safe files which, in turn, were placed upon trucks, and transported by a protective-force convoy of vehicles between Las Vegas and Los Alamos. The convoy was made up of approximately 18 armed members of the Los Alamos Protective Force. All were armed with side arms, and the convoy was further armed with four M1 rifles and two Thompson submachine guns. Only AEC data were contained in the documents and material transferred between Las Vegas and Los Alamos. Access to the data was confined to the sender who was in all cases the final recipient, and safe-file combinations were known to only those operating personnel involved in the transfer.

Both operating and visitor personnel were required to sign Security Acknowledgment and Termination Statements. Operating and visitor personnel were given security lectures upon completion of Operation Ranger. Official VIP visitors were issued a pamphlet indicating what could or could not be discussed. Official visitors, other than VIP's, were also furnished a pamphlet outlining limitations of discussions.

After the removal of all classified documents and material from Building T-926, located at Nellis AFB, and from the control point and blockhouse, located at Frenchman Flat, there was nothing of a Security significance remaining in the Las Vegas area from Operation Ranger. In the event the fireball had touched the ground, four members of the protective force

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were detached to perform both safety and security patrols in the area. However, an analysis of the sand sample indicated that there was classified information involved.

5.2 COMMENTS AND RECOMMENDATIONS

With the completion of Operation Ranger, the Nevada Test Site entered the permanent construction stage. With Operation Ranger as a basis upon which to formulate Nevada Test Site security safeguards to be considered in the construction of the permanent proving ground, the following recommendations are presented for consideration. (These recommendations are not final, and alternate security safeguards may be used with the reservation that substituted safeguards provide a similar or higher degree of protection.)

5.2.1 Physical Security

All buildings of security significance, such as the control point, Operation Headquarters (like T-926 at Nellis AFB) and the AEC Administrative Office (presently at 817 South Main Street, Las Vegas) should be of heavy construction without windows or, if natural light is desirable, of glass brick. This security requirement would not add the extra cost of air-conditioning, because the extremes of weather would make air-conditioning mandatory.

Internal and external doors should be kept to a minimum dictated by safety requirements. All doors should be of solid industrial-steel design. Hinges should be set internally or, if external, hinge pins should be spot-welded. Door locks should be eight-pin-tumbler replaceable case locks, and key control should be confined to the guard on duty. Internal doors to areas of greater exclusion, such as the Communication room, involving classified tapes, should be equipped with internally controlled buzzer locks and an exterior phone for identification and request for admission.

Areas of security significance should preferably be fenced with radar-type fence, with alarms being recorded in the Central Guard Station. With radar fencing, constant guard patrols would be unnecessary since one of the two guards on duty would be available to respond to the alarm signal. In conjunction with the radar-type fence, 500-watt pole-mounted illuminaries should be in section sequence so that unauthorized attempts of entry would not only actuate the alarm but automatically activate the protective lighting and create a field of light where the attempted entry is made. In addition to the type of protective lighting recommended in conjunction with the radar fence, building façades should be illuminated by reflector-type adjustable illuminaries mounted from the top and corners of the buildings.

To prevent private or commercial planes from having visual access to tower shots, with the bomb in place, arrangements should be made with the CAA to designate a sufficiently large area outside the proving grounds as a Restricted Area. This restriction need only be actuated during operational periods.

5.2.2 Guard Force

It is definitely recommended that the operating contractor establish, provide, and maintain the required guard force. As to the number of stations and personnel to man the stations, little in the way of a concrete recommendation on the number of personnel involved may be made until preliminary plans of the permanent proving ground are available. It is safe to assume that three permanent stations manned by two guards 24 hr a day, seven days a week, will be required. Also an air patrol may be used, if deemed essential. Two sweeps, seven days a week, of approximately 2 to 3 hr each, should be a basic requirement.

The three permanent stations tentatively should be located as follows: one controlling access to the area from the south, one controlling access to the area from the north, and one controlling access into operating headquarters area. In addition to Security stations, consideration must be given to providing guard personnel to operate the necessary Security Radio Net and to providing sufficient guards for escort duty. All Security stations, vehicles, and planes should be equipped to receive and transmit by radio. Permanent fixed stations should

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also be equipped with telephonic communications and auxiliary power units. Sufficient exterior lighting should be planned to enable the guards to identify personnel easily, whereas interior lighting should be kept to the barest minimum. All guards should be armed with .38 caliber side arms, and fixed stations should be equipped with one M1 rifle and one Thompson submachine gun, with adequate supplies of ammunition located in sealed glass gun racks.

5.2.3 Communications

During Operation Ranger it would have been helpful if dual communications (radio and telephone) had been established between all stations. Supervision by personal tour was difficult and time-consuming. It is also believed that in a field operation of this nature a minimum of 20 per cent overstrength in both personnel and vehicles should be provided. There were numerous escorts and special details which entailed the working of long hours under adverse conditions. During one 24-hr period it was necessary to furnish 16 men for special details in addition to the normal station requirements. The distance between stations and the need of relief vehicles precluded the possibility of adequately servicing the vehicles. Further recommendations concerning communications equipment and operation are presented as follows:

1. All possible height should be given to net-control radio-station equipment, making use of remote-control lines for operation as required.
2. One standard type of auxiliary power unit should be used at all outlying stations requiring this type of power. The 3-kv type now in use at protective-force stations at Los Alamos is recommended.
3. Both telephone and radio equipment should be installed in Security stations wherever practical.
4. Communications procedures should be kept short and simple.
5. Persons manning net-control stations should have adequate facilities for recording communications traffic.

5.2.4 Identification

For permanently assigned operating personnel and Laboratory personnel who will be frequently engaged in operations at Nevada Test Site, a tamper-proof photo badge is recommended (as per GM-153). In addition to the operations badge a visitor's badge should be provided for all visitors.

5.2.5 Visitor Control

All personnel, operational as well as visitors, should be required to clear through the Office of the Resident Security Agent. GM-56 should be strictly followed in regard to visitors.

It is recommended that Washington personnel prepare and widely distribute this requirement to all interested groups of the Armed Forces and contractor personnel who may be, or may become, affiliated with Nevada Test Site.

5.2.6 Personnel Clearance

It is recommended that all operating personnel and nonmilitary visitors have a valid Q clearance and that military personnel have a valid M clearance for access to Restricted Data B. During the construction period uncleared personnel may be used until such time as a security interest becomes evident.

5.2.7 Storage of Classified Material

Should future operations necessitate the need for nuclear component parts being retained at Nevada Test Site, it is recommended that a heavily constructed 1- to 2-ft-thick steel-reinforced concrete vault be built with a Baby Bank-type vault door. This vault should be alarmed to detect personnel approach, heat, and sound, with the alarm ringing in the Central

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Guard Station. Preferably this vault should be located near enough to one of the guard stations to enable the guard on duty to keep the vault under constant surveillance. The size of the vault will be determined by the requirements furnished by technical personnel.

5.2.8 Shipment Security

In order to assure shipment security, GM-2 should be followed as to requirements and adaptation made to meet local conditions as determined by the local Resident Agent.

5.2.9 Safeguarding Restricted Data and Other Classified Matter

The details of safeguarding restricted data and other classified matter should be worked out by the local Security agent. However, it is specifically recommended that a large vault be constructed for the storage of documents that operating officials may consider necessary to keep in storage between test operations. The vault should be steel-reinforced concrete from 8 to 10 in. thick with a Merchandise-type vault door equipped with a three-way-combination Greenleaf lock. This vault should also be wired to alarm for heat, sound, and personnel approach.

Further, it should be provided well in advance of any test operations that each operating division or section is to take the necessary steps to ensure the supply of its groups with a sufficient number of adequate repositories and burn boxes.

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